The Builder.

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Crowe and Cavalcaselle's Life of Raphael.

THE second volume of Crowe & Cavalcaselle's "Life of Raphael"* has certainly not been expected with very much impatience; nor is the fact at all hard of explanation. The co-ordination of our knowledge of the history of early Italian art was a work never thoroughly attempted, and certainly never approximately accomplished, till the authors of the "New History of Painting in Italy" took it in hand. Their labours were crowned with that highest of all success, which is proved by the fact that students instructed by their history have been enabled to advance beyond it, and to discover and manifest its shortcomings. A new generation of careful students of art history has arisen, furnished (owing to the vast preliminary labours of Crowe & Cavalcaselle themselves) with a critical apparatus of continually increasing complexity and exactness, and the honest and thorough forerunners, to whom we owe so much, are in danger of being thrown into the shade by students who, but for them, could not have attained the knowledge they possess.

The life of Raphael† offers no such vacant field as the early history of Italian art presented a few years ago. Raphael has been the subject for one biographer after another, and since the appearance of Passavant's work the amount of new matter likely to be brought together by a new biographer has always been relatively small. Nevertheless, in the last few years two important lives have appeared,—the German book upon Raphael and Michelangelo, by Anton Springer, and the French Life of Raphael, by Eugène Müntz. Morelli's "Italian Masters in German Galleries" has likewise thrown a powerful new light upon the course of the great artist's early development. Altogether, there remained little for Messrs. Crowe & Cavalcaselle to discover, or even to re-arrange.

The disappointment caused, not in England only, but amongst all lovers of art in Europe, by the perusal of the first volume, arose, not because the book contained no new facts of importance, but because it neglected to make due use of the work done by Morelli, Müntz, and others. It took, in the opinion of the majority of competent critics in England and abroad, a false view of the nature of Raphael's early career. It held Timoteo Viti to be Raphael's pupil rather than his teacher, and it accepted the so-called Venice Sketch-book as the product of Raphael's boyish hand. These two false judgments greatly diminished the value of the first volume.

The second volume deals with the last part of Raphael's career, from the time of his arrival in Rome to his death. In this period there are few such burning questions for a biographer to deal with. We know practically everything needful about the course and influences of his life. His pictures and drawings manifest a steady progression in a definite direction, and documentary evidence of various kinds exists in tolerable quantity. The character of the second volume could thus be foretold beforehand. There is little to correct in it, and there is little likely to attract. It is a solid piece of work, full of facts, duly catalogued, co-ordinated, and indexed. Its price is kept moderate by the omission of all illustrations, which the rapid increase in the number, excellence, and accessibility of photographs renders no longer needful. In this connexion, however, it is unfortunate that the authors have not given the names of the photographers and the numbers in their catalogues of the photographs of the pictures and drawings referred to. The example set in their German edition of the "History of Flemish Painting" might have been followed here with great advantage. A chronological list of the genuine pictures and drawings referred to would not have been difficult to construct and would have been useful to all students, besides that it would have given relief to the crowded alphabetical index.

The book is clearly the result of a great deal of work and research, but what is new in it is chiefly conjectural. Page after page presents its crop of suggestions, of possibilities, of probabilities more or less modified. Such a picture may have been suggested by such an event; such a drawing by the work of such and such an artist. Of this kind of thing we can readily have too much. Even the most specious conjectures are poor food. The worst of it is that sometimes, by the mere lapse of a few pages, a conjecture is turned into a fact. This is an old failing of our authors. It is one of their most annoying idiosyncrasies. Unless the reader be careful and critically disposed, he is liable to go away with the impression that a thing actually was the case when in reality it may have been quite otherwise.

Thus Bramante's connexion with Raphael assumes in this "Life" a more definite form than recorded facts can be quoted to prove. We know that the architect and the painter were close friends, and that Raphael was on more than one occasion dependent upon Bramante for advice in architectural matters. But the exact nature of their connexion is not so clear as Crowe & Cavalcaselle would lead their readers to imagine.

One of the most interesting portions of the book is that which deals with Raphael's architectural works. When Bramante died in 1514, Raphael was appointed to succeed him as architect of St. Peter's. He immediately prepared a model and estimates, which, however, have not come down to us. Bramante's first idea was to build an edifice upon a plan of the form of a Greek cross, covering an area of about 26,465 square yards. He soon had to abandon these gigantic proportions. When the four great piers of the dome had been raised to a considerable height, their foundations were discovered to be insecure. Other defects in Bramante's scheme likewise made themselves manifest, and corrective measures had to be taken at a very early date. When the building was committed to Raphael he made no less alteration than the substitution of a Latin for a Greek cross in the plan. "The way in which Raphael worked out his design was severely criticised by contemporaries, and condemned by Michelangelo. Antonio Picconi da San Gallo ventured to call Raphael's aisle a lane; he pointed out defects in the ambulatories at the heads of the transept and choir, blamed the distribution of the weights on the pillars of the tribune, and the poverty of the cornices and their projections. But when Michelangelo afterwards came to express an opinion on Picconi's own plans he dealt blows of quite another kind, and called Antonio's model 'food for beasts and oxen, who knew nothing of architecture.'" "There is reason to believe," say Messrs. Crowe & Cavalcaselle, "that Raphael's talent as an architect was more genial than profound"; and in this judgment they are probably right. He could conceive a gracefully-proportioned general design, but he had not training and experience to enable him to follow it out in detail. Instead of being the master over his assistants, he was their slave. As long as Bramante lived, Raphael's lack of thorough knowledge of this branch of art was not perceived. He is said to have gone to Bramante for the designs which he employed in the backgrounds of his frescoes of the "School of Athens" and Heliodorus. He was only acquainted superficially and at second-hand with the writings of Vitruvius, until he got Mario Fabio Calvo to translate them into Tuscan for him. How lacking Raphael was in genuine architectural feeling is shown by his treatment of the two-storied *loggia* erected in the Vatican by Bramante. Raphael, without

* "Raphael: his Life and Work." By J. A. Crowe and G. B. Cavalcaselle. Vol. II. London. 1885.

† We adopt the spelling "Raphael," instead of "Raffaelle," in accordance with the title of the book.

considering the strength of the structure, built on a third story, and then found himself obliged to close the arches of the lower colonnade to prevent the whole thing from crumbling to pieces.

Fortunately Raphael did not make much impression on St. Peter's during the time it was under his charge. The works went forward in a very leisurely fashion, so that when Michelangelo was placed in command, he was able at once to return to Bramante's scheme and continue that with slight modifications. But it must not be supposed that Raphael was half-hearted in his architectural studies. On the contrary, for a time, he was thoroughly absorbed in them. When he was painting in the Camere della Segnatura and dell' Eliodoro, he devoted much of his attention to the designing and execution of the frescos, but the Camera dell' Incendio was chiefly the work of his pupils; he did little more than generally oversee the work. Besides St. Peter's, Raphael is accredited with a good many architectural works. It is true Vasari's statements are couched in ambiguous form. For the Villa Madama, for instance, Raphael is said to have furnished the design, but the drawings made to scale, now in the Uffizi, are by Antonio da San Gallo. The "designs sketched" for S. Giovanni of the Florentines at Rome, and S. Lorenzo at Florence, were never carried out; whilst the Palazzo Pandolfini, for which also he "sketched" a design, was not begun till after Raphael's death. As for the Chigi chapel at the church of S. M. del Popolo, it is by no means certain that Raphael had anything to do with the structure, whilst his connexion with the Farnesina is involved in much obscurity. Altogether, it is probable that Raphael did little more than give to trained architects suggestions upon the practicability of which they had to decide. If possible, they carried them out, with the needful modifications; if impossible, they simply laid them on one side. In fact, Raphael's connexion with architects was just like Dürer's. Builders, sculptors, amateurs, all came to Dürer for suggestions, and they got what he had to give, and made whatever use of it they could. In this respect there is a great contrast between Raphael and Michelangelo, for Michelangelo was at heart a sculptor and an architect. The monumental structure of things fascinated him, and not their momentary outside appearance.

The second volume of Crowe & Cavalcaselle's "Life" is, of course, mainly devoted to Raphael's work as a painter. Each of his frescos and pictures is very fully investigated and unnecessarily fully described. Unless the reader have some kind of reproduction at hand the descriptive matter is wearisome, and in face of an illustration it is useless. Moreover, the descriptive passages themselves are often far from felicitous. The main virtue of the book, as it seems to us, is the thorough manner in which the authors have worked the history of the time into their discussion of the artist's works. They have made every possible use of contemporary documents and of the labours of others in the same field, and they have thus been enabled to approximate still further towards an accurate chronology. The period in the year 1511 at which Raphael finished the frescos in the Camera della Segnatura has been fixed by them with much probable correctness. They show that in the month of August both the walls of the Camera della Segnatura and the finished portion of the roof of the Sistine Chapel were bared for inspection. Several other such points of minute chronology receive discussion, and in more than one instance a welcome light is thrown upon what was previously obscure. We need not, and we do not, always agree with our authors' conclusions, but we cannot refuse them our thanks for untiring patience expended by them on our behalf.

It is the more annoying, therefore, to be obliged to say that much of the work the authors must have gone through has been wasted when it might have been turned to good service. There is no doubt that they have read the Raphael literature with much care, yet again and again they come to and pass by controverted points without so much as a hint that the conclusions adopted by them have been already widely disputed. Just as in the first volume they assigned (without a word on the other side) the "Apollo and Marsyas," to Raphael,—a picture now almost universally accepted as by Perugino,—so in this volume they devote some three pages to the so-called "Fornarina" of the Barberini Palace, without so much as hinting that the large majority of students of Raphael consider him to have had no hand in its production.

In discussing particular pictures, they talk very glibly of the share this and the other assistant took in the work. They see here the hand of Giovanni da Udine, there that of Gian Francesco Penni, or Giulio Romano. It is impossible for a reviewer to express a decided opinion off-hand about the correctness of such discriminations, but their mere multitude is startling, and the *ex cathedrâ* tone in which they are pronounced is far from being reassuring. In one or two instances we know that we disagree with Messrs. Crowe & Cavalcaselle's conclusions, but it is only the experience to be derived by using their book in the face of the pictures themselves that can enable the formation of an authoritative judgment upon its merits in this respect. We have had occasion again and again to disagree with similar discriminations introduced by the same writers into their earlier works, which we have tested line by line in many a church and gallery. In this last book of theirs the number of such authoritative statements is far increased, and they are just as tyrannically expressed as ever. We cannot but feel more than usual distrust in results so stated.

Our chief objection to the book as a whole is that it is merely a "life" of the same type as those that have gone before it. It is not, and does not attempt to be, final. It goes a step further in preparation of the way; it does something towards removing misconceptions, rectifying dates, and defining the existing productions of Raphael's art. It makes no real attempt to grasp the whole area of the man's work, and wrench forth from the tangle of tale and legend the man himself. If all Raphael's pictures were to be destroyed from the face of the earth, as, in the nature of things they some day will be, this "life" would avail no more than any of its predecessors to give to the memory of Raphael himself an enduring monument. The business of a biographer is not to index and arrange the works of his subject, but to manifest for all time the manner of man that he was. If no painting by Fra Angelico existed the artist-friar would still be a recognisable individual, owing to the vivid sketch of him printed amongst Vasari's "Lives." To all lovers of Raphael's art the painter's personality is well known. We want some biographer to come forward and make it his business to express that personality in writing. We want a psychological study of the man's mind to be made by some one capable of looking below the surface of a picture and seeing something more in it than an historical puzzle. It need not be said that the author who alone can produce such a book must be himself an artist. Of course he must, but the artistic spirit is by no means rare. It can be traced in every mind, usually in a retrogressive condition. It needs fostering to make it a formative power. Let the historians of art of our day set themselves diligently to manifest not so much the technical as the spiritual development of the artists of the past; let them bear continually in mind that the interest in every picture lies not in the chance circumstances by which its making was surrounded, but in the "pictorial idea" it was produced to express. We shall then have volumes upon art history, whose interest will be lasting, and independent of the immediate proximity of the works referred to. Much of the writing upon art in the present day is mere cataloguing in disguise, and if Messrs. Crowe & Cavalcaselle had thrown two-thirds of their present book into catalogue form it would have been more useful to the student, and the residuum would have been more interesting to the ordinary reader.

ANCIENT LIFE FROM ANCIENT MONUMENTS.

NO works could be in form, manner, and intention more unlike than the two we here place together.* But they have this in common that they both represent the modern classical tendency to seek for knowledge of ancient life, customs, thought, religion, by examination of evidence rather monumental than literary. The archæologist is much abroad to-day, the verbal scholar can no longer hold his old exclusive monopoly. Each must help the other if both would not perish in an internecine struggle.

We called attention to Dr. Baumeister's "Denkmäler" when the first number appeared and now that fifteen numbers have been issued amounting to six hundred pages of text, six-hundred-and-thirty-five letterpress illustrations, and six full-page plates, it is time to ask whether the book fulfils the great expectations roused by the prospectus put forth a year ago. A very difficult task was before the editor: he proposed to lay under contribution the whole field of Greek and Roman art, so far as it could illustrate in any way any department of ancient life, and this was to be in dictionary form. The obvious difficulty of classification at once appears, and we do not think it is always quite happily overcome. For example, under the head "Laokoon," we should naturally expect to find the well-known Vatican group, but, as a matter of fact, we do not; the group appears under the heading "Agesandros," and though the classification is no doubt perfectly just, we doubt whether five out of six of the general educated public would be able to supply the necessary link. It seems, indeed, a general principle throughout the book that the *sculptors' names* should dominate classification. The editor even goes so far as to give us the lives of sculptors (*e.g.*, Agoracritos) of whom no works survive at all. This, in a book entitled "Denkmäler," seems a little odd. Considering the title, we think throughout that the *text*, admirable though for the most part it is, has somewhat disproportionate space.

Turning to the illustrations, we note that where they are reproduced from original photographs they are done by the new Meisenbach process of "autotype." We are not quite sure whether this differs in any important way from the excellent process employed by Mr. Prætorius for the new British Museum illustrated guides. Both seem to have in common the ingenious factor of a line produced upon a photograph by taking a plate through the medium of some textile fabric, whereby printing is rendered possible. We note in the Meissenbach process that, faithful in the main though they undoubtedly are, and far preferable for archæological purposes to the old falsifications of engraving, they yet suffer badly from the old light and shade difficulty, which in some cases amounts to positive distortion. The ideal method of illustrations combines the photographic basis with the final touch of the understanding artist; but this, alas! like all good things, is costly. Whether a method of reproduction really good, yet cheap, is possible, we venture to doubt; meanwhile we may well be thankful for "autotopie."

Turning to individual articles, that on the "Alphabet" stands pre-eminent for completeness and for what is in this work a rarer quality, brevity. The tabular view of alphabets, Semetic, Greek, and Latin, is simply delightful. The article on Athene is full and good, but it suffers from Dr. Baumeister's method of classification, for the important Varvakeion statue, the best reproduction of Athene Parthenos is reserved, evidently for the Pheidias article. We are shocked at the plate representing the Acropolis, but we hope Mr. Freeman will buy a copy of the book at once,

* "Denkmäler des Klassischen Alterthums zur Erläuterung des Lebens der Griechen und Römer, in Religion, Kunst, und Sitte." Lexikalisch bearbeitet von B. Arnold, H. Blumner, W. Deecke, K. von Jan, L. Julius, A. Milchhöfer, O. Richter, H. von Rohden, R. Weil, E. Wölfflein, und dem Herausgeber A. Baumeister, mit etwa 1,400 Abbildungen, Karten & Farbendrucken. München und Leipzig: Oldenbourg. 1884, &c.

"Mythologie Figurée de la Grèce." Par Maxime Collignon. Paris: A. Quantin, 7, Rue St. Benoit (Bibliothèque de l'Enseignement des Beaux Arts).

for there, well in view we have the Turkish tower which Pheidias never knew, and which the next generation will never see, and which, however dear to the mind of the comparative historian, can have no place in a book entitled "Denkmäler des Klassischen Alterthums." We do not think that the autotype process is at all successful for landscapes: we seem to see architecture and landscape alike through a piece of intervening muslin. We believe that many of the articles were already written before the first issue, but we think more pains might have been taken to revise them up to date; the article on "Chiton" might have been much improved if the author had read the "De Vestiariis Græcorum" of Dr. Boehlan, a tract which throws new light on the whole subject of Greek dress. Again, in the article on "Aerzte" (Physicians) the whole of the discoveries recently made in connexion with the Asklepeion, and recorded in the *Ἐφημερὶς Ἀρχαιολιγική*, are simply ignored: no one is more wishful than we are ourselves that this periodical could be persuaded to appear in any language except its own, but as that is improbable the duty of reading it remains. Dr. Baumeister has drawn such abundant and excellent illustration from vase-paintings that we wonder to see him wholly ignore vase-*painters*. He gives us, as we said before, an article on Agoracritus, of whose works we know nothing: why does he ignore such vase-painters as Brygos, Duris, and Euphronios, from whose works he is so ready to draw information?

But enough of carping: the book is, in method and completeness, far before anything we have, or are likely to have, in England. Specialists in each subject may grumble that each article is not posted up in the last new theory, but every student, and especially every schoolmaster, ought to rejoice that he has ready to hand the means of *realising* his literary work, of verifying his classical teaching. A first-rate index will simplify many complications, and we may add an English translation would be welcome to many who do not love to labour in the German idiom.

No one need wait for a translation to enjoy M. Collignon's "Mythologie Figurée." The book is just one of those light, delicate bits of popularisation which the first-rate French savant from time to time delights to give us, and which, after laborious acquaintance has been made with a subject, are so pleasant to read. The subject is touched so delicately that we sometimes wonder if due impression can be made on minds not already prepared. Figured mythology, or mythology from the monuments, is a subject of which hitherto we have had no handbook. We have had manuals of mythology illustrated from monuments, but that is not the same thing. What M. Collignon does is to build up the type of the god or goddess out of the representations ancient art has left us, to show us step by step how the formless stone, the "*βαίτυλος*," grew by successive developments into the Athene of Pheidias or the Hera of Polycleitos. Before he takes the individual gods in succession he gives us an interesting chapter on the general subject of the "formation of figured types." "A l'origine même s'il faut en croire les textes anciens, le culte réligieux s'adressait aux objets naturels que la divinité était censée remplir de sa présence. L'Artémis Soteira de Boiæ était un myrte, et à Orchomène une statue de la déesse, placée dans les branches d'un cèdre, consacrait le souvenir de l'antique dévotion à l'arbre sacré." The why of this worship M. Collignon is happily not called upon to decide. He may hold with Mr. Max Müller that the sight of the tree awakens "the awe-struck thought of powers infinite, invisible, divine, that the tree possesses a kind of life, an unknown and unknowable yet undeniable something," or he may be a reader of Mr. Lang, and have thereby lost his illusions; he may believe that tree-worship arose from the hope of catching a resident "possum," or a desire to tap the trunk for honey, or "probe in the bark for grubs." By the first illustration he gives we think M. Collignon inclines to this base, utilitarian creed. He figures the delightful coin of Myra, in which a rude image of Kybele, the mother of the gods, is perched, half tree herself, among the branches of the tree. The practical savage, says Mr. Lang, even if he worship the tree for its grotesque form and tremble at the thought of the "boilyas" in its branches, will yet, probably, deal with the problem of its occult life by burning it round the stem, chopping its charred wood with stone axes, and using bark and branches as they came handy. This is just what is happening on the Myra coin, but we regret to say the print is so bad that few could make out the scene unless it was familiar. Two sacriligeous savages with their axes are chopping away at the tree, but the boilya does not gladly suffer their sacrilege. She sends out two rearing snakes to slay the impious ones.

The charm of M. Collignon's book is that he begins always at the beginning. We are introduced to no full-blown gods and goddesses. He understands to the full the charm of the *origines* of things. Though the remoter branches of archæology are freely laid under contribution and much obscure literature has been ransacked, yet we have no heavy pedantry; always the same light hand. Of course here and there we could wish a change. When the type of Athene Parthenos is in question we must, no doubt, have the Varvakeion figure, done to death though it is, but why not add the beautiful Petersburg medallion, with its grave, gracious style, full of the spirit of Phidias, and unique as a close reproduction of chryselephantine style? M. Collignon is far at his best among archaic types. He flags a little (but who would not?) in Greco-Roman art.

SEWAGE AT AYLESBURY.

THE directors of the Native Guano Company have just published the Report of the experiments recently made on the A B C process by Dr. Tidy and Professor Dewar, the results of which, as recorded in diagrams and tabulated statements, certainly go far to establish the fact of its producing a satisfactory effluent. The experiments were conducted very carefully, precautions having been taken to guard against a possibility of particularly favourable or unfavourable conditions influencing the results, by collecting samples of the raw sewage and effluent every half-hour, and mixing equal portions of four consecutive half-hour samples for chemical examination. By this means, three series of experiments were obtained, differing in the quantity as well as in the strength of the raw sewage to be dealt with. The mode in which the process is carried out appears to be that the B C mixture is first run evenly into the sewage and completely and immediately deodorises it, no escape of offensive odours into the surrounding air taking place. The Alum solution is added afterwards, as it was found that the addition of the precipitating ingredients separately afforded better results.

In the first series of experiments attention was more especially directed to the matters in suspension and solution, both in sewage and effluent, and the relation between the organic and inorganic portions respectively, the quantity of organic matter being determined by the amount of oxygen required to oxidise it, and which was found to average 1·795 grains per gallon in the sewage, and 0·522 grain in the effluent, showing that 74·8 per cent. of the organic matter had been removed. Of the suspended matter, 89·3 per cent. had been intercepted, while the ratio of inorganic to organic matter was in the sewage as 1 to 1·18, and in the effluent as 1 to 6, which showed that the suspended matter left in the latter was principally organic. The matters in solution yielded a mean of 46·3 grains per gallon in the raw sewage, and 57·5 grains in the effluent.

The second series of experiments was devoted to a consideration of the character of the organic matter, both in the sewage and effluent, before and after filtration. The results obtained showed that 83·3 per cent. of the oxidisable organic matter had been removed by the treatment in the unfiltered state, and 61·4 per cent. from the filtered sewage; also that one-seventh of the organic matter in the sewage, and one-sixth of that in the effluent, was volatile. The suspended matter removed in this series reached as high as 96·8 per cent., while a great improvement in the deposition of the sludge over that observed in the first series was apparent, although the quantity of precipitating material used was only slightly more than one-third of the total weight of sludge produced. This series of experiments was characterised by a very large flow, a greatly increased strength of sewage, and the improved working of the process.

The third series was taken principally on account of the very dry weather which had been prevailing, and the consequent unusual strength of the sewage. The results showed a removal of 86·3 per cent. of oxidisable organic matter, while the removal of the suspended matters, notwithstanding they reached the abnormally large amount of 246·3 grains per gallon, was so complete that the effluent was devoid of turpidity, and contained only 0·98 of a grain. The conclusion arrived at is that the A B C process is capable of producing a uniform effluent under very varying conditions and degrees of concentration of the sewage.

After concluding the experiments with the first part of the process, viz., the purification of sewage, the second process,—that of the drying of the sludge, and its conversion into a saleable manure under the name of Native Guano,—was subjected to examination.

The manure is, in fact, only the partially dried precipitated sludge mixed with some sulphate of magnesia and ground. One curious feature of the process is, it is explained, the large amount of heat developed in the interior of the heaps of the cylinder-dried manure both before and after grinding, which continues for many months in the stacked manure without any apparent diminution, reaching a maximum temperature of 113 deg. Fahr., at which it remains, without emitting steam or any apparent sign of heating on the surface of the heap, until it is turned over. Instead of any loss of ammonia resulting from this action, an examination of the gases showed that they contained only ·01 per cent. of ammonia, and 5 per cent. of carbonic acid, suggestive of the action being due to oxidation, and not to any fermentative process. But direct experiments for determining the actual loss of ammonia in the preparation and subsequent heating brought out the fact that a manure was obtained containing only 20 per cent. of moisture without its manurial value being sensibly affected, so far as the loss of available ammonia was concerned.

It must be admitted that the experiments carried out by Messrs. Tidy and Dewar prove that the A B C process is unquestionably very effective, as far as the purification of sewage and the production of a sufficiently pure effluent are concerned. Of course the commercial aspect of the question is not one into which they were called upon to enter. How far the expense of the process will admit of its adoption in other localities, or whether any or what proportion of the outlay is recoverable from the sale of the manure, are points which must be determined or explained by the commercial results to the company itself. It has been repeatedly asserted by eminent authorities and experts that sludge, however treated, is not worth its carriage for agricultural purposes except under very exceptional circumstances. Sewage, however, cannot await the determination of its commercial value, but must be got rid of from all great centres of habitation as quickly and effectively as possible, and economically if practicable. Whether the last condition is an accompaniment of the A B C process yet remains to be demonstrated.

The late Mr. R. C. Page.—Mr. Arthur E. Northcote writes to ask us to mention that a painted window in memory of the late Mr. Richard C. Page has been erected at St. Alban's, Holborn. The name of the designer of the window is not communicated.

NOTES.

AN important meeting was held at the rooms of the Society of Antiquaries on Friday, the 12th, the Bishop of Durham in the chair, consisting of subscribers and others interested in the excavation of the Temple of Ephesus, from which Mr. Wood has already gained such important results. After an address from the Chairman, Professor Newton moved, and Mr. Beresford Hope seconded, the first resolution: "That the sculptures already found on the site of the Temple at Ephesus, and only forming a small portion of the entire remains, are incontestably of the highest artistic value, while the inscriptions, now being prepared for publication, prove also to be of great value in both a literary and archæological point of view," which was carried unanimously. The Dean of Llandaff afterwards moved, and Sir Talbot Baker seconded, a resolution to the effect that a new subscription list be at once opened, and a sub-committee formed to take such steps as may be necessary for completing the work: also carried unanimously. Professor Newton spoke eloquently and to the point as to the value and interest of the inscriptions that had been discovered, and urged that a proper and adequate sum should be found to enable Mr. Wood to continue his excavation. "To deal out niggardly grants of 50*l.* at a time was a reproach to the country." We concur entirely. The Government ought to make a liberal grant in aid of an Englishman who has distinguished himself and his country by such valuable discoveries at the cost of so much toil and perseverance. But there seems to be a hopeless and Philistine indifference to these subjects in official circles.

THE extraordinary solicitude which the members of the Conference on the Suez Canal have suddenly developed as to the sanitary protection of the European ports appears likely to have results which M. de Lesseps will be the first to resent. The blocking of the canal by the sinking of a dredge occurs at a moment when the question of delay is engaging the attention of the owners of vessels that now use the route. Forty-eight hours and thirty-six minutes were passed in the canal, on an average, in 1883, by every vessel that went through, for only nineteen hours and thirty-two minutes of which she was under way. With the speed attained by commercial steamers, which are now built of 2½ times the size common in 1870, it requires but a little more delay to make the canal a more costly route than the old course by the Cape. In 1882, out of 928,147 tons of cargo shipped from Calcutta to Great Britain, 440,375 were sent by the Cape route. Thus it is evident that it is no vague threat on the part of shipowners that if the proposed quarantine regulations are imposed, with a view to injure English commerce, that commerce will take care of itself. The value of time is an ascertainable quantity, and the result of the attempt to injure England, if persevered in, may be the ruin of the canal.

THE serious delay occasioned by the sinking of a dredge, when the whole power and goodwill of the persons composing the service of the Canal are strained to the utmost in order to keep open the waterway, may give Englishmen some idea of what is likely to happen if the control of the Canal should pass into unfriendly hands, in the case of any complications involving the despatch of troops to India. With the mercantile navy, the chief object is to secure low freight; and as soon as the heavy charges of the Canal are aggravated by the delay of several days, commerce will seek the open sea-water. But for military service speed is of more importance than saving of expense. The route, once opened, cannot be closed; and the possibility that it might be opened to our enemies and closed to ourselves is one that we cannot afford to neglect. In the Tel el Kebir campaign the Canal was seized by surprise in the most masterly way. A fast steamer was sent up it by Lord Wolseley, which put a guard on each of the dredges, and thus effectually prevented such a misadventure as has recently occurred. And when M. de Lesseps got up in the morning Port Said was in the possession of the English. The Canal authorities were frantically angry,—for their sympathies were altogether against us. But the affair was properly carried out. And anything that will prevent a defensive action of this nature on the part of Great Britain in the event of war, will be a serious danger to the Empire.

THE pertinacity with which railway companies endeavour to evade the effect of adverse judgments is remarkable. When appeal is out of the question they seem to cast about for other means to render the decisions of the courts of no benefit or advantage to their opponents. This was strikingly exemplified in a case decided before the Railway Commissioners last week. The plaintiffs (Messrs. Girardot, Flyn, & Co., of Derby) are corn factors and maltsters, but the issues involved affect all traders possessing private sidings. This firm obtained a judgment in their favour against the Midland Railway Company, in July of last year, in connexion with alleged preference given to the Burton brewers in freight charges on grain. The company, so far from accepting this judgment, appear to have adopted the course just indicated by "revising" their rates to Derby; and on plaintiffs declining to pay these charges, they refused to deliver their traffic at their private sidings as heretofore. The three Commissioners each delivered judgment on the case, one of them holding (as argued by the counsel for the company) that they had no jurisdiction in the matter. But the result was that the company are to resume delivering plaintiffs' traffic at their sidings, they paying the rates demanded, but reserving the right to object to such charges in a fresh action. Considering the expense involved in the construction and maintenance of private sidings (for which no allowance is made beyond a rebate for collection and delivery) it is satisfactory to find that they cannot be practically closed at the will of the railway companies.

WE are glad to see that the last issue of the *Archäologische Zeitung* (Jahrgang xliii. Erstes Heft Taf. 1, 1885) the authorities of the Berlin Museum have at last published a very beautiful Greek terra-cotta relief which has been in their possession some three years. The relief is of the finest period of Greek art, fifth century B.C., of, we think, unique beauty, and, from its subject, of great mythological interest. It represents Charon in his boat just touching the shore; to him Hermes approaches leading a maiden figure. No publication could do justice to the severe delicacy of the original, but all that mechanical means can do is done in the phototype of the *Archäologische Zeitung*. On the original are faint traces of colour. In consequence of this the authorities of the Museum will not allow a cast to be taken, an added reason for this adequate publication. With it appear in the same number two beautiful Athenian white lekytho; with the same subject slightly modified. In both Charon brings his boat right up to the tomb itself, and seems to grasp at the funeral offerings. A very interesting paper by Professor F. von Duhn of Heidelberg accompanies the publication. He shows that the myth of Charon was of the purely popular sort, foreign to the aristocratic temper of epic literature, rising therefore to importance only in the fifth century, the century of democratic impulse. In the text he publishes also a fourth-century replica of the same motive, and, from the juxtaposition of the two plates, he deduces the whole moral of the contrast between the art and life of the fifth and fourth centuries B.C.

THE terra-cotta fragment to which we referred in a past number (*Builder*, May 6) as bearing the design of "Hermes carrying the child Dionysos" turns out to be, not as was at first supposed, a piece of a painted vase, but a bit of late Roman "terra sigillata." Such fragments have, of course, great archæological value, because they not infrequently embody types borrowed from works of real artistic merit, and, no doubt, this is the case in the present instance. The design is clearly Praxitelean; the execution, however, is so rough and blurred that it is quite impossible to say *what* Hermes holds in the right hand. This much is satisfactory, that the object held is not a bunch of grapes. It is a long shaft of some sort, possibly a thyrsos,—possibly, but less probably, a caduceus. It will be remembered that Dr. Treu, the finder of the Praxitelean statue, desired to restore it with the thyrsos in the right hand, and to this, his original view, he has steadily adhered. The fragment is published in the *Archäologisch-Epigraphische Mittheilungen aus Oesterrich*, Jahrgang viii., Heft 2, Taf. v., and is accompanied by a commentary by the finder, Dr. Rollett, and the editor, Dr. Benndorf.

PERSONS who supply men and plant to corporations will do well to make themselves acquainted with the recently-decided case of Jones *v.* The Corporation of Liverpool. The Corporation seems to be in the habit of hiring horses and men for purpose of working the carts which water their streets, and the employer of the men is the person by whom they are paid, and not the Corporation. One of these carts injured the plaintiff's carriage, and Mr. Justice Day decided that the Corporation were liable for the negligence of the driver of the water-cart; but the judges of the Queen's Bench Division have thought differently, and have reversed this judgment, holding the Corporation not to be liable. The principle of the decision seems to be the same as that acted on in an older case, namely, that the person who chooses the servant and has the power of dismissing him is the person who is liable for his misdeeds, and not the person who, so to say, has the right temporarily to order him to do this or that. In the recent case an inspector superintended the watering of the streets, and directed the drivers where to go. This, however, did not seem to the Court to be sufficient to make the Corporation to such an extent their master as to make them liable for their negligence. It is obvious that this principle may have a wide operation.

WE understand that there is a scheme in hand for erecting dwellings for the labouring poor (more especially for women engaged in industrial occupations) in the parish of St. James, Westminster. A trust fund of the amount of 6,000*l.* has been placed at the disposal of the Vestry of that parish for the purpose, and it is intended to invite four architects, experienced in that class of buildings, to enter into a limited competition, in order to secure the best possible return for the money, in construction, arrangement, and accommodation. The architect whose design is selected will be employed to carry out the work.

CONSIDERABLE excitement has been caused by two fires which have taken place during the last few days,—that at Mr. Whiteley's establishment on Wednesday, and that at the Inventions Exhibition on Friday last week. The fire at Mr. Whiteley's assumed alarming importance in consequence of its rapid progress, which at one time seems to have threatened a more extended and very serious conflagration. The details have been fully made known through the daily papers; the only point for comment here is in regard to the statement made in the *Times* report, that "the iron doors that have been placed in the buildings seem to have had little effect in checking the progress of the fire." We do not suppose such doors ever would have much effect in the case of a large and fierce conflagration which has once made head; they are better than nothing, however, for they at all events assist to isolate a fire in its earlier stage, and give greater chance of checking it. The fire at the "Inventories" was not a large fire as fires go, but it was watched with painful interest owing to the imminent danger to the Indian collection, and also the great risk of an extended conflagration in the Exhibition if the flames had fairly passed the brick barrier of the building in which they originated. The point of junction between

this and the frailer structure of the Exhibition entrance buildings was evidently felt to be a critical one, and every effort was made to meet and check the fire at this point. Watching the whole affair, we were rather impressed with the loss of time and apparent want of concerted action in attacking the fire; also with the entire failure of the chemical fire-annihilating bottles to produce any apparent effect. Crates of these were hoisted up to the roof of the Exhibition entrance (with several slips and breakages, owing to the incapacity of some persons to tie a knot that will not slip), and thrown at the fire with more or less dubious aim, and apparently with about as much result as throwing so many ink-bottles in. The bulk of the India Museum articles were got out, but more loss has been sustained in this department than was at first stated. Exhibition-road was the scene of a complete *tapage* for two hours, in the midst of which was to be seen the artist of an illustrated journal quietly sketching the scene in the midst of the fire-engines and the general excitement. Others found their special interest in the spectacle. "What a colour for a dress!" exclaimed a lady, as the flame and smoke mixed into a ruddy orange; and then, after a moment's more critical consideration,—"at least, for a *morning* dress!"

WE wish to call attention to an admirable work which has been set on foot by the "Home Arts and Industries Association," a society having for its object to spread a knowledge of decorative arts and hand industries among the people. There are now about sixty classes established for this purpose in England and Ireland, and a few in Wales and Scotland, where instruction is given *gratis* by those who know enough of drawing, designing, and modelling to be able to teach others, or, at least, help them on their way in the work. The head-quarters of the Society are at 1, Langham-chambers, Langham-place, and in July an exhibition will be held at 3, Carlton House-terrace, of work done by the classes of the association.

THE Peel Grove Burial Ground was before the Court of Queen's Bench last week, as reported on p. 849, in connexion with the issue raised by the case of Gibbons *v.* Chambers. Some doubt at first existed as to whether the Act prohibiting the building on disused burial-grounds applied to the Peel Grove Burial Ground, building having been commenced by the defendant before the Act was passed; but we are now informed that the law officers of the Crown have been consulted upon the point, and have advised that in their opinion no buildings can be erected upon disused burial-grounds, and that if the present erections are in any way proceeded with the same come within the scope of the Act, and can be dealt with accordingly. The Metropolitan Board of Works are now applying for power to put the Act into motion, and this, it is to be hoped, will be the termination of what at one time seemed to be likely to prove a great scandal to public morality and decency.

WITH regard to the subject of building upon private areas, we understand the Metropolitan Board of Works have decided not to appeal against the decision of the magistrate in the case of the Chelsea Park Dwellings Company [p. 743, *ante*], but to select two other cases which are now before the Courts, as it is thought that the latter cases better illustrate the point upon which the decision of the High Court is wished as to building on private areas.

ONE of the most ancient of the few remaining old houses in Lambeth will shortly go the way of its more famous neighbour and contemporary,—the Swan. It is close to the waterside, being No. 157 in Lambeth-road, formerly Church-street, and over the wide entrance into Swan (or Palace) Yard. The large room, which occupies nearly all the first floor, has served for a conventicle, and is said to have been used by Bunyan on the occasion of his evangelistic visits to this quarter from Bedford. Adjoining No. 157 is the cleared site of the Swan, pulled down some three years since, reputedly one of the earliest public-houses established in London.

A CORRESPONDENT writes:—"Signor Giacomo Boni, a Venetian architect, has reprinted from the *Ateneo Veneto* a spirited protest against the proposed demolition of the ancient thirteenth-century fortifications of Bassano, to which we have before referred. Signor Boni writes with a wonderful command of the subject, and quotes from the Greek Anthology, Ovid, Virgil, Shakspeare, Goethe, Heine, Ruskin, W. D. Howells, and others, in support of his propositions, and his citations are made with singular accuracy and propriety. His quotation from the "Tempest," act i., scene 2, with regard to the injurious action of ivy on buildings:—

> "The ivy, which had hid my princely trunk
> And suck'd my verdure out,"

draws attention to a danger which was recognised by Pausanias, but which is too often overlooked by the custodians of ruins and ancient buildings, particularly the towers of Mediæval churches. He also quotes with commendation the words of an Italian lady of the fifteenth century, Margaret, the daughter of Ruberto Acciainoli, a worthy daughter of her father, according to Vasari, who relates that she was the means of preventing the furniture belonging to her husband, who during the siege of Florence had retired to Lucca, being carried off to France. When Giovambattista della Palla, with permission of the mayor and Town Council of Florence, offered to purchase the property, she replied:—'So, you vile old-clothes man, you are ready to despoil this city of its most valuable and most honoured objects in order to embellish a foreign country. I do not wonder at you, despicable enemy of your country, but I wonder at the authorities of this city who have urged you to this abominable wickedness.' Strong words for the fifteenth century."*

THE committee which has been formed to provide a suitable memorial to the late Sir John Goss, organist of St. Paul's, have adopted a design by Mr. John Belcher for the monument in the cathedral. A panel by Mr. Hamo Thornycroft, A.R.A., representing choristers singing, forms part of the design. Sir Arthur Sullivan is chairman of the committee, and Mr. T. L. Southgate hon. secretary. The monument to Sir John Goss's memory is only a portion of the scheme that the committee have in contemplation.

THE portrait of Gordon, by Mr. Lowes Dickinson, now being exhibited at 57, Pall Mall, is judged by relatives of the deceased hero to be a good likeness of him; so we are given to understand. But the painting, representing him standing on the tower at Khartoum on "his last watch," draped in a cloak, and with a lorgnette in his hand, is hard, theatrical, and unreal, and we have no pleasure in seeing this kind of memorial to a man who, in his greatness, was also the simplest and most unpretentious of men. If there is to be any artistic monument to Gordon, the highest art we can command at present is hardly adequate to the occasion, and we have no wish to see him commemorated in second-rate art. We think of Burns's dying request to his brother,—"Don't let the awkward squad fire over me!"

WE have received from our esteemed contemporary the editor of the *Revue Générale de l'Architecture* an advance proof of some remarks in regard to the great ceremony at the obsequies of Victor Hugo in the early part of this month. M. Daly considers that those who directed the ceremonial did not rightly apprehend their task, and made a mistake and missed a fine point in draping the Panthéon in funeral array. He says, the lying in state of the body under the Arc du Triomphe was the mournful side of the ceremonial; there the mortal remains of the poet were laid in state before reaching their last abode; but in entering the Panthéon he entered into glory and immortality; it was his apotheosis. It was right to drape the Arc de Triomphe with funeral emblems, but "il eût fallu draper de gloire le Panthéon, le temple de l'Apothéose, y faire ruisseler l'éclat de la pourpre et de l'or, comme le firent autrefois les Romains aux obsèques de César." This is certainly a fine and suggestive idea, and worth bearing in mind on another such occasion; but, alas! there is not another Victor Hugo. Our contemporary remarks, in conclusion, on the happy idea which occurred to some one of gathering up the crowns and wreaths of natural flowers with which the steps of the Panthéon were strewn, and making them up into memorial bouquets, to be carried away as souvenirs, instead of leaving them to decay where they were laid. He was assured that "the poet" who conceived this idea was an engineer, M. Klein. "Où diable," says M. Daly, "la poésie va-t-elle se nicher aujourd-hui!"

* Not at all. It was a time when strong words were in fashion.—ED.

THE CONGRESS OF FRENCH ARCHITECTS.

WE left the members of the Congress* at the Abattoir of La Villette on the morning of Wednesday, the 10th; the afternoon of the same day we find them at the École des Beaux Arts, where M. Perrot, member of the "Académie des Inscriptions et Belles Lettres," and Director of the "École Normale Supérieure," held us under the charm of his finished and fluent discourse.

What a fine theme for an archæologist, that of the "First Temple of Jerusalem,"† that marvel of which all times have spoken, and the recollection of which has traversed history like a brilliant meteor, and the destruction of which marked the dispersion of a race which, in spite of the miseries of its exodus, its struggles and persecutions for ages, has kept itself so prodigiously tenacious of life and so faithful to its origin; that temple which seems the type of priestly architecture, and which, singularly enough, has been adopted as a mysterious symbol by the most diverse creeds and the most opposed form of religion and free thought; by Judaism, Christianity, and Freemasonry.

It was of this that our lecturer treated with learning, drawn from the best sources, endeavouring especially to defend the topography of the Temple, such as Hebraic tradition and written documents have indicated it, such also as it has appeared to be confirmed by English explorers, to whom M. Perrot rendered full homage, notably to Sir Charles Wilson, whose plans were reproduced photographically, to the great interest of the meeting. M. Chipiez, the architect, who has long been the collaborator of M. Perrot, completed the historic and philosophical exposition by technical explanations. For this last lecturer the Bible has served as a basis for a work of calculation, which has enabled him to re-establish with precision the cost, dimensions, disposition, and internal arrangement of the Temple, and even the decoration as described by the prophet Ezekiel. To use a distinctly Parisian expression, one may say that through his study and manipulation of the prophecies of Ezekiel, M. Chipiez has completely entered "dans le peau de personnage." His restoration is, no doubt, hypothetical, but so ingenious that one is persuaded, almost convinced, more especially when, in support of his demonstration, he brings before our eyes, with the optical illusion of shaded projections, the plan of the Temple with its first enclosure, into which strangers were admitted; the "parvise" of the Levites; then the *naos*, or Holy of Holies, where the high-priest alone could penetrate once a year: and, lastly, in the rear a sort of court, in the form of an Egyptian temple, surrounded by the principal dwellings reserved for the priests.

According to M. Chipiez, who relies in this a good deal on the work done at the close of the last century by the architect Cassas, to whom we owe drawings made in Syria, Phœnicia, and Palestine, which have become very scarce, it is

* See page 829, *ante*.

† And what a transition,—from the Paris abattoirs in the morning to the Temple of Jerusalem in the afternoon! Is there any other profession that is expected to embrace such diverse interests

in Phœnician art that we should find the guide for the construction of the Temple as it must have existed, and it was, in fact, from Phœnician monuments that he derived the plan, elevations, façades, and perspective views which were successively exhibited to the audience.

The order of the day brought us, at the close of this long lecture, an account by M. Chas. Lucas of the ninth annual congress of the learned societies which was held this year at the Sorbonne. As this *compte-rendu* would lead us into too long a digression, we confine ourselves to mentioning only this part of the programme, which brought M. Lucas much applause. For the same reason we merely record that at the sitting of Friday, the 12th (almost entirely devoted to reports of committees), an excellent discourse was given by M. Dally on the necessity of pushing forward more vigorously the study of architecture.

On Thursday, the 11th, the Congress left by the Gare St. Lazare, which unhappily is now no longer the "ville des vieilles rues" celebrated by Victor Hugo, but in its numerous monuments still offers to visitors much matter for study of great interest.

Received at their arrival by the architects of the "Lower Seine," who offered them lunch, with its inevitable accompaniment of toasts, the members proceeded to the Palais de Justice, so well restored and enlarged by M. Lefort, the architect-in-chief to the department, of whose drawings we spoke with appreciation in our article on the *Salon*. After having admired the façade, of which M. Lefort offered each member a photograph, and the Salle de Pas Perdus, restored 1876, and of which the woodwork recalls some of the lost *chefs d'œuvre* of old Rouen, the Congress proceeded, under the guidance of M. Sauvageot, the diocesan architect, to the Church of Saint Patrice, an historic monument of 1539, restored by M. Barthélemy, where there are some admirable sixteenth-century windows. Rouen is besides preeminently the city of glass-painters, and the windows of the Church of St. Ouen, which have been restored by M. Bernard, of Rouen, are justly celebrated.

With so experienced a guide as M. Sauvageot, the Congress could see rapidly though in sufficient detail the churches of St. Godard, St. Venient, the cathedral where the wondrous portal rises between the two towers, and which contains that tomb of the Duc De Brézé, of which the *Builder* gave a view in the number for June 21, 1884; the Church of St. Maclou, and the ancient parochial cemetery known under the name of Aitre St. Maclou, where the grim sculptures of the *danse macabre* contrast so curiously with the Cupids, nude female figures, and erotic subjects carved in the capitals of the cloister which surrounds it. It is to M. Sauvageot that we owe the museum actually in course of construction, and the new Théâtre des Arts, which replaces the structure burned in 1876.

Among the civil monuments, the Congress particularly remarked the Joan of Arc Tower, the Museum of Antiquities (one of the richest in France), the Fontaine Ste. Marie, the work of M. Deperthes, and decorated with sculpture by M. Falguière; the Lycée Corneille, the Hôtel de Ville, the remains of the Abbey of St. Ouen, the Hôtel Bourgtherold, that beautiful gem of Renaissance art now occupied by a financial establishment; the great clock, the old Hôtel des Finances (another Renaissance *chef d'œuvre*), and lastly, the quays of the Seine, which bring out finely the picturesque perspective of the ancient city and the modern town.

In the course of these peregrinations, M. Lebreton, the curator of the Museum, gave an interesting discourse on the celebrated faïence of Rouen; and in the evening, after terminating this very well-occupied day by a banquet, the Congress returned to Paris, carrying away from the old Norman capital admiration of its numerous points of interest, coupled with the recollection of a cordial reception.

For some years the Congress has been in the habit, each session, of visiting one of the workshops for the fabrication of products employed in modern building. Last year they paid a visit to M. Didron, the celebrated glass-painter; the year before to M. Parville, the well-known maker of ceramic ware; the year before that to the model brickmaking yard of MM. Müller & Cie., at Ivry. This time it is again "céramique" which has tempted the French architects, and the visit on Saturday morning, the 13th, to the address of M. Leibnitz, Rue Pierre Levée, was in some sort the sequel and the justification of the lecture of the Tuesday previously by M. Deslinières, a lecture which, owing to the superabundance of work in 1884, had been postponed to the present year.

M. Leibnitz is an industrial artist, of great ability, and one may say that with M. Deck, he holds the first place at the head of modern ceramic workers. His name is well known in Germany, where his terra cotta and enamelled faïences constitute, especially at Berlin, one of the most important elements of the interior decoration of houses.

In 1840 his grandfather, M. Pechinat, invented the faïence panels which have come into such common use now; and it was he who first began to ornament faïence by means of decorations "*au petit feu*," as in porcelain, and this first attempt in this way figured in the Exhibition of 1844. He began with flowers and birds, then employed a kind of damask design, as in some form of textiles; lastly, he employed flowers and bouquets which an artist recently deceased, M. Julienne, grouped for him with great skill and fancy. The models were afterwards infinitely varied, and we had successively medallions with figures, reproductions of German stones, and panels of bright and clear colour offering means for a cheap decoration of façades. We may mention especially the terra cottas executed after the cartoons of M. Emile Lévy, and treated like fresco with very simple tones and a contour of engraved lines. This kind of decoration adorns the principal façade of the manufactory of M. Leibnitz, and has a very happy effect. It is surmounted by a frieze in faïence designed by M. Sédille.

It is to M. Liebnitz that we owe the execution of the grand gateway, designed by M. Sédille, to the south entry of the Pavillon des Beaux Arts in the Exhibition of 1878. This gateway, made in blocks of terra cotta, and enamelled, showed to what a superb artistic effect ceramic art could rise. We came upon the portions of it in the course of this visit, as also on the panels which formed so fine a decoration to the ball-room in Arabic style, of which the ceiling presented large pierced ornaments very difficult of execution, and intended for the reception of coloured glass. But we have not space to enumerate all the varied models and artistic curiosities contained in the *atelier*, where M. Leibnitz has piously preserved also a collection of designs executed by the hands of the late M. Duban and of Viollet-le-Duc, *souvenirs* of the restoration at the Château de Blois and the Château d'Eu under the hands of those masters.

The conclusion of this last day of the Congress was devoted to the distribution of awards. This solemnity was presided over by M. Alphand, Directeur de Travaux, supported by MM. Questel (President), Hermant (vice-president), Paul Wallon (Secretary), Mr. I'Anson (delegate from the Institute of British Architects), M. Kaempfen (Director des Beaux Arts), M. Doulin (Director of Civil Buildings), and MM. Bailly and Sédille, architects.

M. Alphand gave an address comparing the works of modern architects with those of the engineers, both of whom concurred to assure to French art and industry an important place, and alluded to the social crisis of the moment, urging that we must be the friends of the working classes without flattering their false ideas and jealousies, often embittered and heightened by subversive social theories. M. Daumet followed with an address, unfortunately not always very audible, on the late M. Abadie and his works. Mr. I'Anson, who spoke with complete fluency in French, after referring to the works of MM. Abadie and Ballu, announced, amid much applause, that on the preceding Monday the Royal Institute of British Architects had nominated in their place, as Honorary and Corresponding Members, MM. André and Hermant, to whom he was charged to present the diploma of the Institute. In conclusion, Mr. I'Anson expressed himself warmly as spokesman for his countrymen on the admiration and esteem of the English architects for their comrades in France; a sentiment cordially responded to by M. Alphand, who expressed his belief that the two nations, who were "à la tête de la civilisation," would be always, in spite of passing political divergences which did not disturb the calm of their avocations,* united in marching hand in hand in the path of art and progress.

M. Sédille then made his report, in the name of the jury for awards, announcing that this year the honour to architects who had applied the resources of art and science to the amelioration of habitations had been adjudged to MM. Achille Hermant, Nicolas Escalier, and Louis Martenot, to whom were awarded the three silver medals of the Lesonfaché foundation.

M. Escalier, who obtained the second medal at the *Salon*, is both architect and painter. In the house which he has built, 33, Rue Galilée, and the interior of which he has ornamented with large decorative panels, everything, as M. Sédille expressed it, is united in a kind of general harmony. M. Hermant, who in spite of the criticisms formulated by the Conseil Municipal of Paris, will be remembered no less as the constructor of the remarkable *Maison de repression* at Nanterre, merits eulogy also for his buildings in the Rue du Mail; and M. Martenot, architect, of Rennes, is well known in the artistic world by his numerous works. After having announced the honourable mention of the jury as awarded to M. Étienne, M. Sédille bestowed a high eulogium on the Reverend Père de la Croix, member of the Society of Antiquaries of Poictiers. To this indefatigable explorer, who two years ago discovered the ruins of Sauxay, the Honourable Mention in the department of archæology was awarded.

The medals which the Congress awards every year to the pupils of the French schools at Athens and Rome remind one of the intimate union existing between architecture and archæology. In this department the jury had selected M. Pierre Paris, on account of the excavations undertaken by him at Elatea, to find the remains of the Temple of Athene Cranaia, and M. Laloux, already known to our readers, who will remember the description we gave of his restoration of the Altis at Olympia, for which he received the *médaille d'honneur* of the *Salon* Jury.

We note next the Destors silver medals, adjudged equally to MM. Francis André and Louret, both of whom have entered into residence for the *prix de Rome*; the Chaplain medal, awarded to M. Margotin *fils*, a decorative sculptor of great talent. The Rolland medal was awarded to M. Thibaron, and the Van der Goyen medal to M. Emmanuel Garnier. The silver medal, founded in 1877 by M. Paul Sédille, for art-industries, was awarded to M. Guilbert Martin, chemist, of St. Denis. In giving this latter award the Congress wished to recognise his labours in regard to mosaic work, which, after a journey in Italy, he introduced into practice in France. The materials for this work are made in his workshop at St. Denis, where he is forming a company of young mosaicists; it was there that the mosaics for the Pantheon, after Hébert's cartoons, were made. M. Guilbert Martin has already obtained the *médaille d'honneur* of the "Union Centrale des Arts Décoratifs," and has been charged by the Government to execute the cupola of the Grand Staircase of the Louvre.

The remainder of the sitting was devoted to the delivery of medals to the boys of the "École Municipal d'Apprentis," to the "Cercle des Maçons," a kind of professional school presided over by M. Daumet, and which has been of great service; and, lastly, to "Veterans du Bâtiment," as the recompense of a life of honourable hard work.

Among these venerable workers whom M. Paul Wallon, in an eloquent report, held up as examples to the young working men, while exhorting them to repudiate the detestable theories of the "*déclassés*" and the revolutionists, we may name M. Bertrand, joiner, of Paris, MM. Neand and Gubiau in the same branch of trade at Lyons, and M. Bellais, foreman of the "Agence des Travaux du Palais Royal," who is seventy-seven years old, and has worked forty-eight years, without cessation, in the same building yard.

The tremendous applause which greeted this part of the report, and hailed the appearance of the venerable workman, formed a pleasant and gracious recompense, of a nature to give rise to some reflections in regard to those who thus seem to have understood so exceedingly well the "social problem." One may be pardoned for a remark on this subject, for, as M. Wallon well observed, in these times of social disturbance and revolution, it is touching to see, in the midst of all the squabbles of politics,

* We may cap this with the remark of an eminent English landscape-painter the other day, to a friend who was lamenting the littlenesses of modern politics:—"Well, of course, there always must be politicians; the best thing is to let them go on and take no notice!"

these simple and straightforward natures, going on unhesitatingly in the path of duty, and coming forward humbly at the end of their career, astonished at the applause which greets them, to receive the unexpected testimony of esteem and respect.

Giving then a rapid *résumé* of the work of the Congress, the President, M. Questel, pronounced the Session of 1885 closed, and in the evening a fraternal banquet united for the last time at the Hôtel Continental, the Parisian members of the Congress, their colleagues from the provinces, and the visitors who had responded to the invitation of the Société Centrale des Architectes.

INVENTIONS EXHIBITION.

HYDRAULIC MACHINES.

DURING recent years the utilisation of water pressure for mechanical purposes has made substantial progress. This has been largely due to the firm of Sir William Armstrong, whose enterprise in the construction of hydraulic cranes, dock-gates, movable bridges, &c., has fully demonstrated the value of water pressure for a great variety of mechanical operations not hitherto attempted. Workshop processes, too, of various kinds,—such as riveting, forging, stamping, &c.,—can now be carried out by means of hydraulic power with convenience and economy. Although in London and other cities hydraulic power may now be rented for working lifts, engines, and other machinery, there can be but little doubt that hydraulic engineering is still in its infancy, and ample scope remains for development and invention in this direction. Considerable advance has recently been made in the means adopted for obtaining economically the desired water pressure by the aid of steam engines and accumulators, and also in the transmission of the power when so obtained. For working hoists, and for many other commercial purposes, the pressure of water obtainable from the ordinary public, or Hydraulic Company's power mains, is sufficient, but where very considerable power is required separate force-pumps driven by an engine can be worked with advantage. An economy attending this latter plan is the very great saving effected in water, as after being used in the rams it can be returned over and over again to the pump tank. Perhaps the most advanced examples of the development of hydraulic power are the cranes used at Newcastle, Cardiff, and other ports, for loading coal ships, which duty they can perform in an incredibly short space of time with certainty and economy.

Before commencing our notice, we cannot refrain from remarking on the extremely unsatisfactory arrangement of this group, all kinds of machinery, neither directly or indirectly connected with water pressure, being mixed up together, compelling the visitor to pick out the hydraulic exhibits as best he may. Riveting machinery and hoists are the best represented classes,—the latter possessing several novelties both in construction and working. Notwithstanding their increased first cost, and greater cost in fixing, ram-lifts appear to be making greater progress in public favour than suspended lifts. The chief reason for this is probably their increased safety and the absence of ropes, gear, &c., which must from their nature necessarily more or less rapidly deteriorate. There are several excellent samples of both types in the Exhibition, which we shall now briefly notice.

The Hydraulic Engineering Company, of Chester, have an interesting exhibit, amongst which is a hydraulic balance ram-lift on Ellington's system. This is worked from an accumulator, and is so arranged that counterbalance chains and weights are done away with, and there is no mechanism whatever above the cage. It is claimed by the makers that, as in ram-lifts, when the lift is at the bottom of its stroke, the lifting-ram is immersed in water in its cylinder, at the top of its stroke it is out of the water. The ram, therefore, weighs more at the top of of its stroke than at the bottom, and to secure economy it is generally necessary that the balance should compensate for this variation in load. This compensation they secure in all low-pressure lifts, and in high-pressure lifts when desirable, by the proportion they adopt between the diameters of the lifting-ram and the balance-ram. The lift is controlled by a single valve, worked by a rope from the inside of the cage. A commendable feature in this lift, and one likely to prevent accidents, is the fact that it is impossible to work it with the door of the cage open.

We also saw here in motion a Brotherwood's three-cylinder hydraulic engine, arranged with Hastie's patent variable throw, which adapts its piston stroke in proportion to the work done. Thus, the greater the load the longer the piston stroke. This is an improvement, as the same effect as expansion in a steam engine is secured, *i.e.*, the amount of water used is in proportion to the work done. In most hydraulic engines with which we are acquainted, owing to water being non-expansive, the same amount is consumed, as the cylinder must be filled every stroke, whether the engine has a full load or is running empty. This variable throw arrangement seems, however, in a great measure to get over this difficulty, and is, to say the least, ingenious.

A Schmid's patent water-meter is also shown. This is a positive meter of the piston type. It consists of two vertical cylinders, with double-acting pistons, so constructed that the pistons act as valves, controlling the flow of the water to and from the cylinders. The two cylinders are connected by admission and exhaust-ports, and they work the two pistons, which are coupled at 90° on to a horizontal shaft. This meter is of simple construction, and should answer its purpose well. We noticed some samples of pipes for conveying hydraulic power, some of these, with ordinary flanged joints, had been broken under a pressure of 3,500 lb. per square inch, whilst the improved pipes, which are arranged with a modified form of spigot and faucet joint, withstood a pressure up to 6,050 lb. We may add that the weight of metal in both pipes is the same, and the improved pipes are similar to those now being laid in London by the Hydraulic Power Company.

A novelty in the shape of hydraulic ram-lifts is exhibited by Messrs. Richmond & Co., of Kirby-street, Hatton-garden, E.C.; it is constructed on the telescopic principle, but the chief feature about it is, that instead of each section rising independently as in ordinary telescopic lifts, the water has to fill only the space underneath the lowest piston when all the sections rise simultaneously. Its action may be briefly described as follows:—Each of the upper sections of the lift when telescoped forms a space between it and the outside of the ram. This space is charged with fluid. Immediately the lowest ram begins to move, the fluid in the upper sections, having no means of escape, flows from the outside of each ram to the inside through an aperture, thus acting on the bottom of all the rams at the same time, and causing them to rise together. In descending the same fluid returns to the outer chamber as before, and as this can be used over and over again a non-freezing fluid such as oil can be used instead of water. An important saving is effected by this form of lift in doing away with the necessity of a deep well or bore holes as required by ram-lifts made on the ordinary plan. We congratulate the makers on their invention, which is a clever idea cleverly and practically carried out, and should from its merits secure extensive adoption.

A hydraulic hoist also on the telescopic principle is exhibited by Mr. B. G. Smith, of Halifax. The rams in this hoist are made to slide one into an other after the fashion of a telescope, the whole when closed occupying about one-fourth the height to which the hoist rises. It can be worked by force-pumps or by water-pressure from the mains. The general construction of the hoist is simple, and, owing to the telescopic arrangement, deep foundations for the cylinder,—as in ordinary hydraulic safety hoists,—are unnecessary. The maker claims for it amongst other advantages a very low first cost, perfect safety, and ease of erection or removal. The rams are usually made about 10 ft. in length, and the cylinder does not require to be sunk below the basement more than the height of one ram, and, in cases where it is not necessary to lift from the basement, no sinking is required, all overhead gear is dispensed with. Unlike the telescopic hoist which we have just noticed, the lifting power of this hoist depends on the diameter of its smallest ram. For ordinary heights and loads this may not be very material, but for very high or heavy lifts it is a somewhat serious drawback, and we would recommend the inventor to tax his ingenuity to try to remedy this.

A hydraulic balanced passenger-lift is exhibited by Messrs. Waygood & Co., of Falmouth-road, S.E. This is worked from an accumulator charged by a rotary pump. Without presenting any great feature of novelty, the general working arrangements appear to be simple and good.

Messrs. Archibald Smith & Stevens, of Battersea, show both a hydraulic balance passenger lift and a hydraulic suspended lift, a hydraulic accumulator and pumps, and a hydraulic single-action door-spring. The chief feature claimed for their new hydraulic balanced passenger-lift is the method employed in balancing. This is effected by means of a cylinder arranged with an upper and lower compartment, with a piston or ram moving between them. The lower compartment contains the same amount of water as the long cylinder of the lift, and this volume of water alternates between the lift cylinder and the the balance cylinder, through a pipe connexion, so that when the lift-cage and ram are up, and the lift-cylinder full of water, the balance ram is down, and the lower portion of the balance cylinder empty, and when the lift ram returns, displacing the water from its cylinder, driving it through the balance cylinder, the ram of the latter is forced upwards. The counter-balance is made slightly lighter than the lift ram and cage, that the preponderance of the latter may always bring it to the bottom of its travel when the driving-pressure is removed. Suitable valve-controlling gear is fitted, and arrangements are made to prevent accidents should this fail from any cause.

Amongst the recent applications of water power hydraulic riveting machinery holds a prominent position. A number of these, made under Tweddell's patents, are exhibited by Messrs. Fielding & Platt, of Gloucester. These are constructed of various sizes and types, as may be specially suited to the requirements of ship-builders, boiler-makers, and others. They are connected to an inverted type accumulator, weighted and arranged so that the water-pressure may be varied from 150 lb. to 1,500 lb. to the square inch.

The "Fielding" type-riveter presents several fresh and ingenious points in its construction, the cylinder being bored to a curve struck from the centre of the gudgeon, to which curve the ram also is traced. This obviates the necessity of jointing the ram or the chance of the dies swerving when in work. This machine is attached to a compound patent hanger, which allows of its being moved round whilst under pressure and worked in any desired position.

A double-ended portable riveter is shown fixed for work on a railway carriage under frame. In this machine the levers are made of unequal length, and a hydraulic cylinder is mounted on one of them, and its ram acts by means of tension links on the other. Various other machines and models are here to be seen, and illustrate well the very great development that has taken place during recent years in this branch of hydraulic engineering. The workmanship in the machines shown is all that can be desired.

An extensive show of hydraulic riveting machinery is made by Messrs. Hugh Smith & Co., Possil Works, Glasgow. This includes machines especially adapted for boiler work, ships' keel riveting, bridge and tank work, &c.; and also an accumulator with direct-acting steam pressure pumps, a hydraulic crane and hoist, &c.

The crane is of the pillar type, but it can be modified to suit the varied requirements of foundries, boiler works, saw-mills, &c., and by mounting it on a centre post they can be made to swivel round in a complete circle. All the motions are worked by hydraulic power, including raising, swivelling, and travelling on the jib. The raising motion is fitted with Smith's Patent arrangement, which gives three powers of lift and three speeds. The changes to give different powers can be quickly made.

We also noticed a massive hydraulic boiler-flanging machine, especially adapted for flanging boiler-end plates, setting and flanging dome end plates, and other similar work. The main frame of the machine is mounted on trunnions, and when it is used for bending flanges, &c., it can be set over at an angle, so that pressure may be put on both angles of the plate. To prevent the end plate from buckling when the flange is being set, a small hydraulic cylinder with ram is made to bear upon it. The end plate is made to turn on an eccentric pin, with lever for relieving the plate when being turned round. For doing this class of work very great pressure is required, and, in the machine under

notice the hydraulic cylinder is arranged with duplex links, giving a leverage of six to one, a much greater pressure is obtained than with ordinary direct-acting cylinder, and the power required to work is reduced in proportion. For riveting the keels of ships for which a pressure of 100 tons per rivet is often required, Messrs. Smith & Co. make a special form of riveter, which they mount on a travelling carriage arranged with vertical and horizontal adjustments for bringing the centre of the steel snaps in a line with the centre of the rivets. Our space prevents a longer notice of the interesting exhibits at this stand, which we may add combine compactness of design, strength, and freedom from complication in a marked degree.

A considerable display of hydraulic riveting-machines with pumps, especially designed for working the same, is made by Messrs. Anderson & Gallwey, of Chelsea. Amongst the riveters we noticed a well-designed machine of the fixed type. The action of this machine is governed by a foot lever, and the riveting die is arranged with an automatic return stroke, which comes into action immediately the operator's foot is removed from the lever. The length of the stroke of the riveting die is regulated as required by means of tappet gear, which is an improvement, as it obviates the necessity of constantly changing the dies. We believe a riveter of this type has recently been constructed for the heaviest class of boiler work, which gives a pressure of some 120 tons at each stroke.

Several very handy portable riveters are also exhibited; these are modified in power and details to suit the requirements of bridge and boiler makers, &c., and include one of very simple construction for use in difficult positions. The pumps for working the riveters combine strength and simplicity of design with ready accessibility to the working parts, an important point not always sufficiently borne in mind by designers. The frame is cast solid round the upper part of the crank-shaft bearing, and therefore receives the strain of the upward thrust, which is an improvement.

Messrs. John Barker & Sons., Limited, Oldham, exhibit a very useful adjunct in connexion with hoists, in the nature of an automatic self-closing door, which can be fitted to any building, and prevents by its action the possibility of passengers falling down the well. A self-landing and self-delivering hoist is also shown here.

The East Ferry Road Engineering Company, Milwall, exhibit a specimen of Duckham's patent hydrostatic suspended weighing-machine, especially adapted for attachment to cranes. It is fitted with a self-indicating arrangement. Models are also shown of self-counterbalanced movable hydraulic cranes.

A duplex hydraulic lift, with pump and accumulator, are shown by Messrs. Clark, Bunnett, & Co., of Rathbone-place, Oxford-street, W.

NOTES ON A FEW "BITS" OF OLD GLASS.

THE skill and ingenuity of the old craftsmen in designing decorative detail is strikingly manifested in the painted windows of the time, and designers and students will find themselves amply repaid for the time devoted to the study of old glass by the excellence of the work brought under their attention. It is now pretty generally admitted on all hands that the art of glass staining and painting reached a degree of perfection in the fourteenth and fifteenth centuries that was denied the other art crafts of the time. The mural painting, for instance, is not of the same excellence as the bulk of the painted windows of the same date, though here and there may be found an altogether exceptionally good piece of painted work, which only serves to emphasise the comparative poorness of the rest of the painted decoration. The early glass-painters seem from the beginning to have recognised the important fact that glass staining and painting is essentially a "colour art," and that, whatever other excellencies a window should possess, it must, above all other things, be a beautiful "bit" of colour. It was not until the revival of the art, early this century, that this fact was brought home to glass-painters. Sir Joshua Reynolds and the school of glass-painters of the eighteenth century had quite lost sight of this important fact, that glass-painting is a "colour art," as the monuments of their misapplied talent and mistaken zeal attest to this day.

It is singular when we consider the question how the early glass-painters came to be so successful; for those who know anything practically about the craft of glass-painting are aware of the great difficulties that lie in the way of a successful painted window. And in looking at old glass onemust never lose sight of the fact that the early craftsmen had to overcome difficulties which a modern painter would deem insurmountable. The work of the early masters, in whatever way it be, must always be looked at from the standpoint of the artist who wrought it, and not, as we are so fond of doing, from the point of view of the present day. The early masters were our pioneers, and had the exceedingly difficult task of feeling their way in an unknown country. There is little credit due to us, who have centuries of examples to guide us, in succeeding; we have hardly any excuse, save our own incompetency, for failing, and we should be very chary of giving out a thoughtless, superficial opinion about old work, simply because we have not the modesty, taste, or sympathy to appreciate it. I have no doubt that a large number of people who go to the National Gallery to see the Ansidei "Madonna" by Raffaelle will look in vain for their money's worth; for are they not aware that for 70,000*l.* one might purchase the whole contents of some modern art galleries? I am not here finding fault with the conclusions many people arrive at on looking at this latest addition to our National Collection, but at the method whereby they arrive at their conclusions.

The way to appreciate old glass is to see it side by side with bad glass. In New College Chapel, Oxford, may be seen a few good old windows, together with some leaded windows of the seventeenth century, about as bad as windows can be, together with that wholly mistaken effort in glass-painting, "the Reynolds" window, as it is termed. In Peterhouse, Cambridge, there is a fine specimen of Dutch glass in the east end window, and some very offensive Munich windows in the nave, said to have taken a medal at the '51 Exhibition! If that is so it only shows what a very "modern art" stained-glass painting is.

Perfection of result may be, and often is, due to limited means, and it was probably owing to the technical difficulties the early craftsmen had to overcome that kept their art so restrained and made their work so entirely successful. It is to be regretted that with increase of technical skill comes the desire of exhibiting one's skill. We see this in the works of many of the rising painters of the day,—this desire of showing the world "what a deuced clever painter I am." The early glass-painters could not do that. The difficulties of their craft restricted them, and imposed the necessary limitations upon them. They went the simplest way to work, contented to arrange large masses of colour effectively and harmoniously, and striving to obtain broad, simple *sculpturesque* effects. With increase of skill came the desire to exhibit their powers of technique, and with this desire the throwing overboard of all restrictions and limitations imposed upon them by their craft, to result, as time went on, in such deplorable examples of mistaken skill and misapplied ability as such windows as those instanced in New College and elsewhere.

There is such a wealth of material in the old glass that has come down to us, even in this country, that it is difficult, in attempting to give scattered examples of "bits" from old windows, to know where to begin, and still more where to end. The examples here offered are, in the main, taken from English glass, though the three-figure windows are from St. Ouen, Rouen. It will be enough for my present purpose if I append a brief note, with the various examples given. Figs. 1, 2, and 3 are taken from the Church of St. Ouen, Rouen. They illustrate a common practice of the early craftsmen of leading a figure richly coloured on to a background of quarries of tinted white glass. These quarries were, in many instances, traced with simple patterns and stained, and it is astonishing what a rich and varied effect is produced by these traced and stained quarry grounds.

Figs. 4A to 4F are examples of leaded borders from Canterbury Cathedral. The ingenuity of the old glass-painters is exhibited nowhere more strikingly than in the ornamental leaded borders. The interlacing and intwining of the patterns, such a notable feature in early Celtic ornament, is managed always with great skill, and is well adapted to the exigencies of the glazier. There are, it may be observed in passing, some very characteristic examples in Canterbury of the early cut up medallion windows, of which such splendid examples are to be seen in the Sainte Chapelle, Paris, and modern imitations in the Temple Church, Strand.

The seven borders, fig. 5, are also taken from Canterbury. The three "bits" of leaded borders, figs. 6, A, B, and C, are from York Minster. Nothing can be simpler or more effective than such borders. It will be noticed that the early glass-painters were not afraid of putting in plenty of solid back-ground. The places left white would be occupied with ruby or blue glass.

Figs. 7A and 7B are from Salisbury, and are fairly typical examples of geometrical leading combined with tracery. Fig. 8, of a different period to any of the foregoing examples, is taken from the Abbot's Hospital, Guildford. Figs. 9, 9A, to 9C are four "roses," from St. Andrew's, Cheddar. The five borders, fig. 10, are from St. Mary Redcliffe, Bristol, as are also the nine circular patterns, figs. 11 to 11I. The ingenuity of figs. 11B, 11G, and 11H is notable. Of the grotesques, 11C is probably symbolical of Eternity, and 11I we might term the germ of the art of the Renaissance, the striving after effects which the artists of the Renaissance carried to their logical conclusions. The three remaining examples, figs. 12A, 12B, and 12C require no comment.

Fig. 12A.

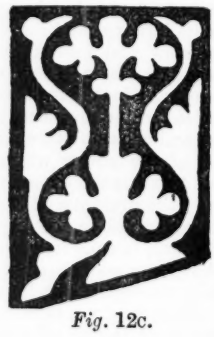


Fig. 12C.

Fig. 12B.

Very many people who receive the keenest and most exalted enjoyment from a visit to one of our noble cathedrals or abbeys have only an eye for the general effect, and almost entirely miss the wealth of detail with which the early craftsmen enriched the fabric of their buildings. And yet keen and discriminating as should be the enjoyment that the *tout ensemble* gives one, it will be found that the fullest enjoyment only can be reached by attention to detail, and though this remark is addressed to those who merely take an interest in old work for its own sake, and not as part of the business of their lives, it is to be feared that students are too apt to be content with generalities,—with the impression of a building as a whole, to the almost total exclusion of the thousand and one details that go to produce the complete and perfect work.

FRED. MILLER.

Mosaic Work.—Messrs. Diespeker & Co., of Holborn Viaduct, have just finished the mosaic (about 700 yards) at the National Hospital for Paralysed and Epileptic, Queen-square, Bloomsbury, which is to be opened on the 1st of July by H.R.H. the Prince of Wales, as a national memorial to the Duke of Albany. The same firm has laid the mosaic at the new Birkbeck Institute, which will be opened by H.R.H. on the same day. The mosaic in front of the altar of "Our Lady" in the Oratory at Brompton has also been executed by this firm, after the designs of Mr. H. A. Gribble, the architect of the building.

Illustrations.

DESIGN FOR ADMIRALTY AND WAR OFFICES.

WE publish this week a reproduction, by Messrs. Waterlow's process, of a perspective view, executed especially for our pages, of the design submitted by Mr. H. B. Garling in the recent competition for Admiralty and War Offices. The view shows the building as it would have appeared from St. James's Park.

As many of our readers will remember, Mr. Garling was the gainer of the first premium in the competition for the War Office in 1857.

NEW OFFICES OF THE *DAILY NEWS*.

THE new buildings erected for the *Daily News*, of which we give an illustration this week, are practically in two blocks, having a frontage to Bouverie-street of 85 ft., and five stories in height, including the basement and a story in the roof. The front building is occupied, on the ground-floor, by the publishing and general offices; the first floor, by the management and editorial department; and the upper floors, by the printing and other offices. The rear building is wholly occupied by the printing-offices, paper stores, machine-room, stereotyping department, and engine-rooms. It is stated that the sanitary arrangements, the ventilation, and the fireproof division of the premises have been carefully studied. One feature in the execution of the work has been that the printing of the paper has not been intermitted for one day during the reconstruction of the building, while the new buildings have been erected over the printing-machines. The buildings have been constructed from designs prepared by Mr. T. Chatfeild Clarke, F.R.I.B.A., and under his superintendence. The works were carried out by Messrs. Brown, Son, & Blomfield, in a short space of time. The ornamental carving, which includes heads of Milton, Johnson, and Goldsmith, Dickens (the first editor of the paper), Forster, and Douglas Jerrold, was executed by Mr. Anstey, and the ironwork was supplied by Messrs. H. Young & Co.

SCULPTURE AT THE ROYAL ACADEMY.

SCENES FROM THE ÆNEID, BY MR. HARRY BATES.

WE before commented, in an article on the Academy sculpture, on this fine little example of ideal sculpture, which would have been deservedly purchased with the Chantrey Fund, but for the technical objection in the fact that, though by an English artist, it was not executed in England. It is rather a pity the bequest was hampered with this formal condition.

The design was originally made for a scheme for the decoration of a dining-room, but, as it was much approved, the sculptor was asked to translate it into bronze. The design was modelled by the sculptor, Mr. Harry Bates, during his travelling studentship, and cast in Paris. We have not often seen work by a young sculptor manifesting so clear a perception of the real aim and scope of sculpture in giving a poetic rendering of an ideal subject The groups and draperies are beautifully composed, and the figure of Dido, in the first panel, is particularly fine.

THE LARCHES, WROTHAM HEATH, KENT.

THIS house, situated on the main road between London and Maidstone, about one mile from Wrotham Station and about three miles from the town of West Malling, is erected on one of the most picturesque portions of the estate belonging to the Hon. Lady Caroline E. Nevill, and, occupying a high level, commands extensive views of the surrounding country. The accommodation on the ground-floor consists of drawing-room, dining-room, and morning-room, kitchen, scullery, butler's pantry, and other offices; on the first floor there are six bedrooms, housemaids' closet, sink, &c.

The outside walls of the ground-floor story,—built with a 2-in. cavity,—are of Kentish rag stone, and lined internally with brickwork; the walls of the upper story are of solid half-timber work, with tile hanging in the gables. The roof is covered with red tiles.

The subsoil of the site is a sandy loam, and an excellent supply of spring water is drawn from a deep well.

The drainage system and sanitary appointments of the house have been carefully designed and arranged; the soil and waste pipes, all ventilated, are conducted to a large water-tight cesspool, about 100 ft. from the house, accessible for emptying when required, and all the rain water is collected in a large tank in the ground, built of brickwork in cement.

The house has been erected and carried out from the designs and under the superintendence of the architect, Mr. Herbert Hardwicke Langston, of 9, Great James-street, Bedford-row, London; the contractors for the work were Messrs. Pryer & Co., of Maidstone.

BALLOON FRAMING.

THE term "balloon framing" is applied, in Canada and the States, to a light kind of timber construction, which is practically independent of skilled labour; it is a rough-and-ready way of nailing sticks together, in an efficient and scientific manner, in the erection of various kinds of buildings, and is quite commonly met with in cottages, houses, and summer hotels in the north-western portions of America.

A descriptive account of the accompanying sketch will illustrate the principle of construction, and its applicability to numerous other structures much more pretentious than the fowl-house illustrated.

Having settled upon the dimensions of the work, we should proceed to the timber-mills and select stuff of the most suitable sizes, 2 in. and 3 in. by aliquot parts of 12 in. being the readiest scantlings, and 12 ft. to 16 ft. the usual lengths, though white pine timber is easily got up to 20 in. square and 30 ft. in length. In the building illustrated the outside studding is 3 in. by 4 in. mostly 14 ft. lengths, the joists 3 in. by 8 in. in 12 ft. and 6 ft. lengths, &c.; thus this part of the labour is dealt with at the mills, the planning of the building being based a good deal on these data, and the timber is brought to the site ready for immediate fixing.

Having got in rough foundations and raised them about a foot above the ground, we proceed to lay the cill, usually 8 in. by 3 in. hollow and spiked at the angles. I name foundation walls, but roughly-squared tamarac (larch) or cedar logs frequently take the place of stone walls.

On the cill the studs are raised and toe-nailed thereto, the angles and door-posts are formed by pairs of studs. On the illustration the angle posts are blocked apart to admit of nailing the end joist to the side studs and for better fixing the internal lining. The intermediate studs are spaced out from 30 in. to 36 in. from centre to centre, the window openings causing the variation.

In this case the ground-floor was formed with concrete, otherwise the ends of the joists would have rested on the cill, close up home to each stud, and have been spiked to cill and stud, forming additional support and perfect tie.

The first-floor is formed by nailing a 1-in. slab or girt, 4 in deep, on the face of the studs, at a level of the under-side of the joists; upon this the ends of the joists rest, close up home to each stud, and are spiked thereto, the combination forming a perfect cross-tie and a solid bearing. Sometimes these girts are let into a sinking on the face of the stud, forming a shoulder for its support, and sometimes the joints are notched over the girt, offering apparent advantages in support and tie; but considering the closeness of the joint and its downright bearing there, is little practical advantage to be gained by this great accession of labour, as will be more apparent when the structure is complete.

In the illustration the building was spaced for the stock length of 12-ft. joists, with half-lengths across the central passage. The joists, where they overlap on either side of the passage studs, are nailed thereto, and notched over the girt, so as to form practically a continuous tie. The joists next the ends of the building are nailed to each stud they pass, every third one being bolted so as to form, when floored over, a perfect longitudinal and transverse tie or diaphragm.

The studs run up the whole height of the structure, passing between the joists, and if any lengthening is required it is done by placing a piece butt on the top, and splicing by nailing long 1-in. slabs on each side, as shown.

The wall or roof plate is 4 in. by 2 in., nailed to the top of each stud, the rafters notched over and spiked thereto, one directly over each stud; thus the points of support are always direct. According to the size and use of the building, ceiling joists may be used spiked to plate and after feet, or collars to each rafter, or less frequently, as the case may be.

The frame-house is then covered externally (and by preference in construction internally also), walls and roofs, with 1 in. or 1¼ in. grooved and tongued boarding in narrow widths. This provides longitudnal tie, and knits the shell into a tight-box. The framing and lining together form the essentials of balloon framing. The lining, particularly the internal lining, adding immensely to its strength, more especially if placed diagonally. When the floors are laid, and the lining all on, the building practically becomes a series of solid slabs knit and tied together in all directions, with no weight not directly supported and no thrust not directly counteracted.

Angle-ties, bridging, and other stiffening pieces are used in larger buildings for extra strength, where the bearings are long or the stories high, but there is nothing in the nature of the construction requiring skilled labour, or beyond the capacity of a man and a boy to raise, or needing any other tools than a saw and a hammer. In small buildings all the stuff would be out of 1¼-in. plank. Except joists, these studs would be 1¼ in. by 4 in. rafters, 1¼ in. by 5 in. joists, 2 in. by 9 in. all spaced, 30 in. centre to centre.

Outside the boarding the walls and roof are covered with thin asphalted felt, called building paper. The roof in the building illustrated is finished with patent actinolite cement ¾ in. thick, which forms a thoroughly weather-tight roof summer and winter. Varieties of this cement are commonly used here for flat roofs; other roofs are covered with tinned iron roofing plates, welted or double seamed, as the edges, or pine shingles 14 in. by 6 in. cut feather-edged, and slates, red, green, and blue.

In town districts these structures, such as that illustrated, are cased externally with half-brick walls, tied in and loaded with long rails or strips of sheet iron, thus presenting the appearance of an ordinary brick house; but in rural districts it is usual to finish the exterior with horizontal or vertical weather boarding or panelling. The former, which is called "clap-boarding," is cut out of the best end of the log, about 7 ft. in length; the cuts are made with the circular saw from the outside towards the centre, as illustrated, leaving a core or heart of about 3 in., giving boards from 6 in. to 10 in. wide, about ¾ in. on the outer edge. On knocking this core out the boards fall apart, and are ready for use. Clap boarding is fixed from the top downwards, the men working on a bracket scaffold screwed to the studs. Each board is driven up home under the edge of that above it, and a chisel nail driven through the two makes a sound and rapid job. The margin or weather face varies from 4 in. to 6 in. or 7 in.

In some cases the walls are finished internally with 1¼ in. grooved and tongued lining only, and the space between the studs filled in with sawdust; sometimes they are battened over the boarding, and lathed and plastered in the usual way, or with wrought lining over the rough boarding.

If the inside is lined horizontally or diagonally, the outside may be covered with vertical boarding on horizontal stiffening pieces, or on horizontal or diagonal battens nailed to the studs. Sometimes the upper story is boarded vertically, and the lower one horizontally.

It is maintained that not only are such buildings some 40 per cent. cheaper to raise than brick and timber used in the usual English plan, but they are (for the climate) more comfortable to live in, warmer in winter and cooler in summer, free from all elements of damp, they can be put up with extreme rapidity to meet a want, and finished off at once, and are ready for immediate occupation.

The large hotel at Minnetonka, giving accommodation for some 400 guests, and a great summer resort, was thus built in 100 days. The system prevails throughout the north-west from the merest cottage to the first-class house and the largest hotel. The elaborate framing of English carpentry with dovetails, tenons, mortises, and pinning, "with oak or iron," expensive straps, heavy timber, close centring, &c., are unknown here, and yet these buildings stand perfectly, and would blow over without falling to pieces. Should a stick decay it can be readily replaced, and should alterations be contemplated, there is little or no difficulty to be encountered, and no expensive preparations are required. THOS. C. SORBY.

Montreal, Dec. 17, 1884.

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4A.

Fig. 4B.

Fig. 4C.

Fig. 4D.

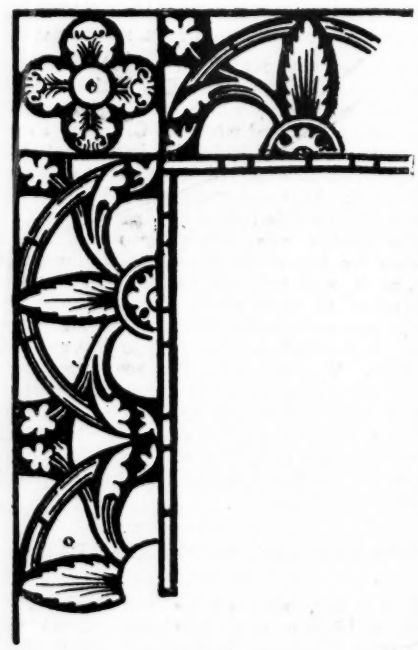


Fig. 4E.

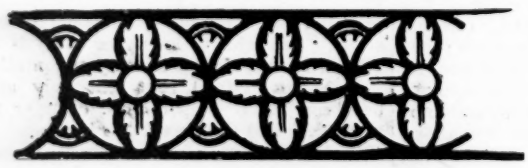


Fig. 4F.

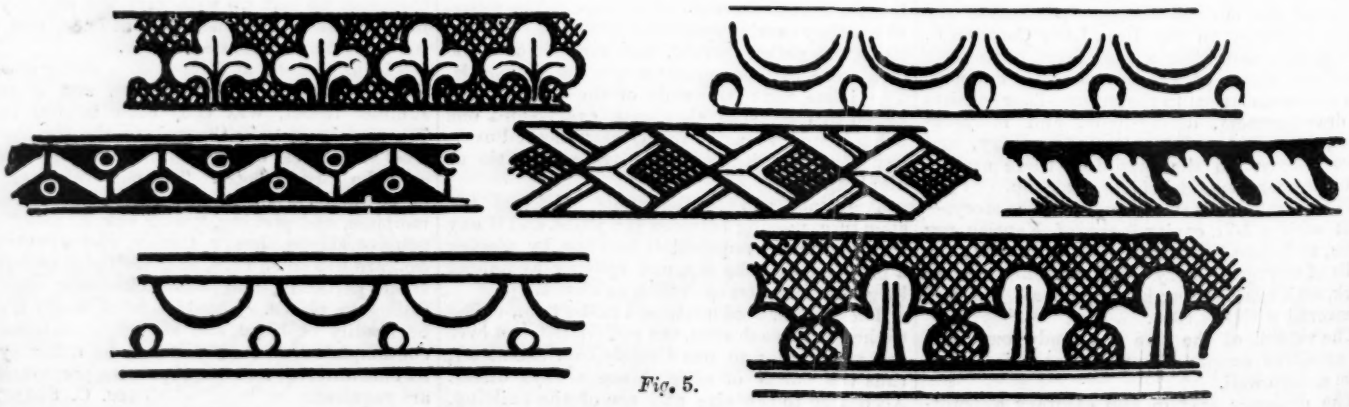
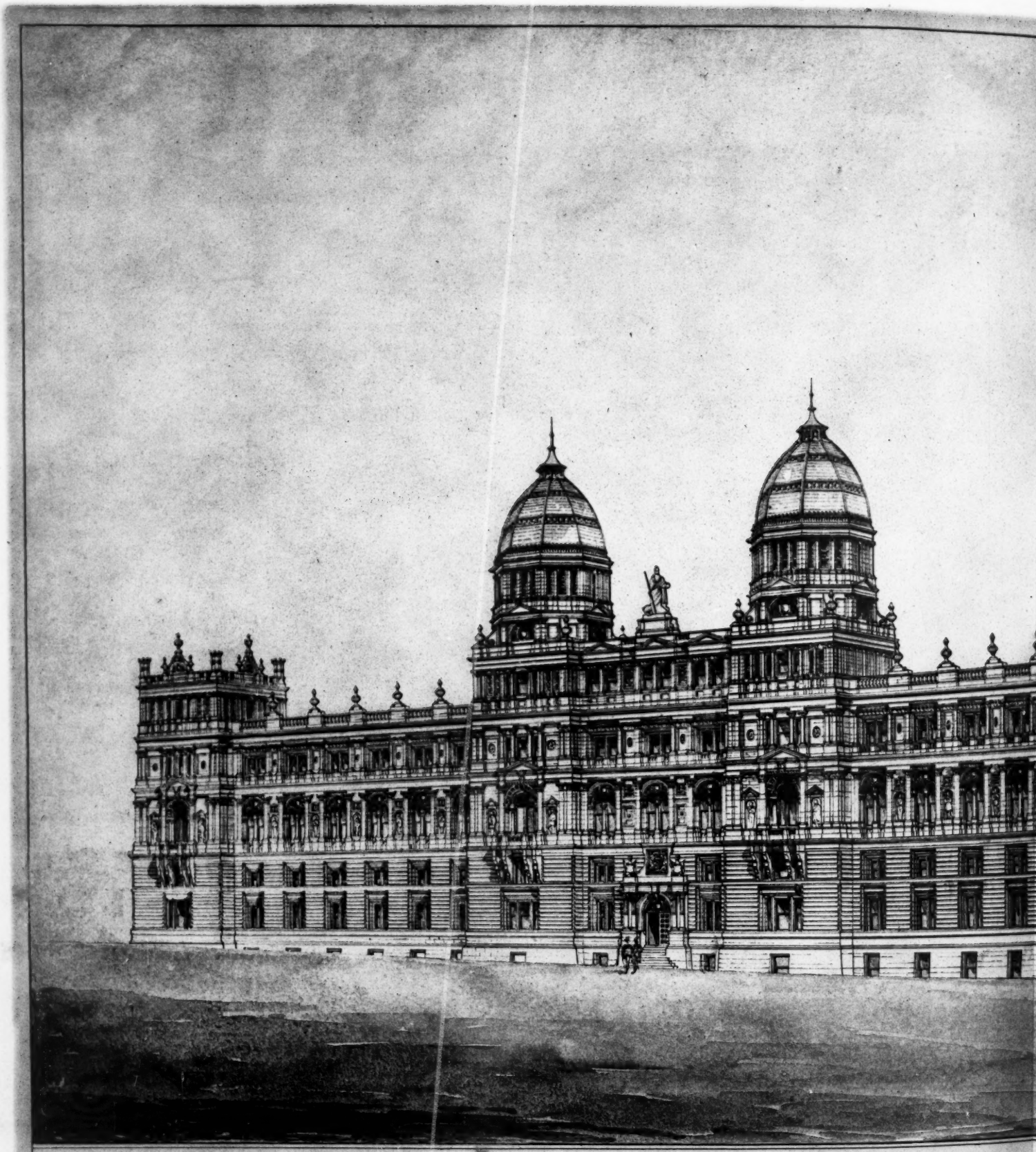


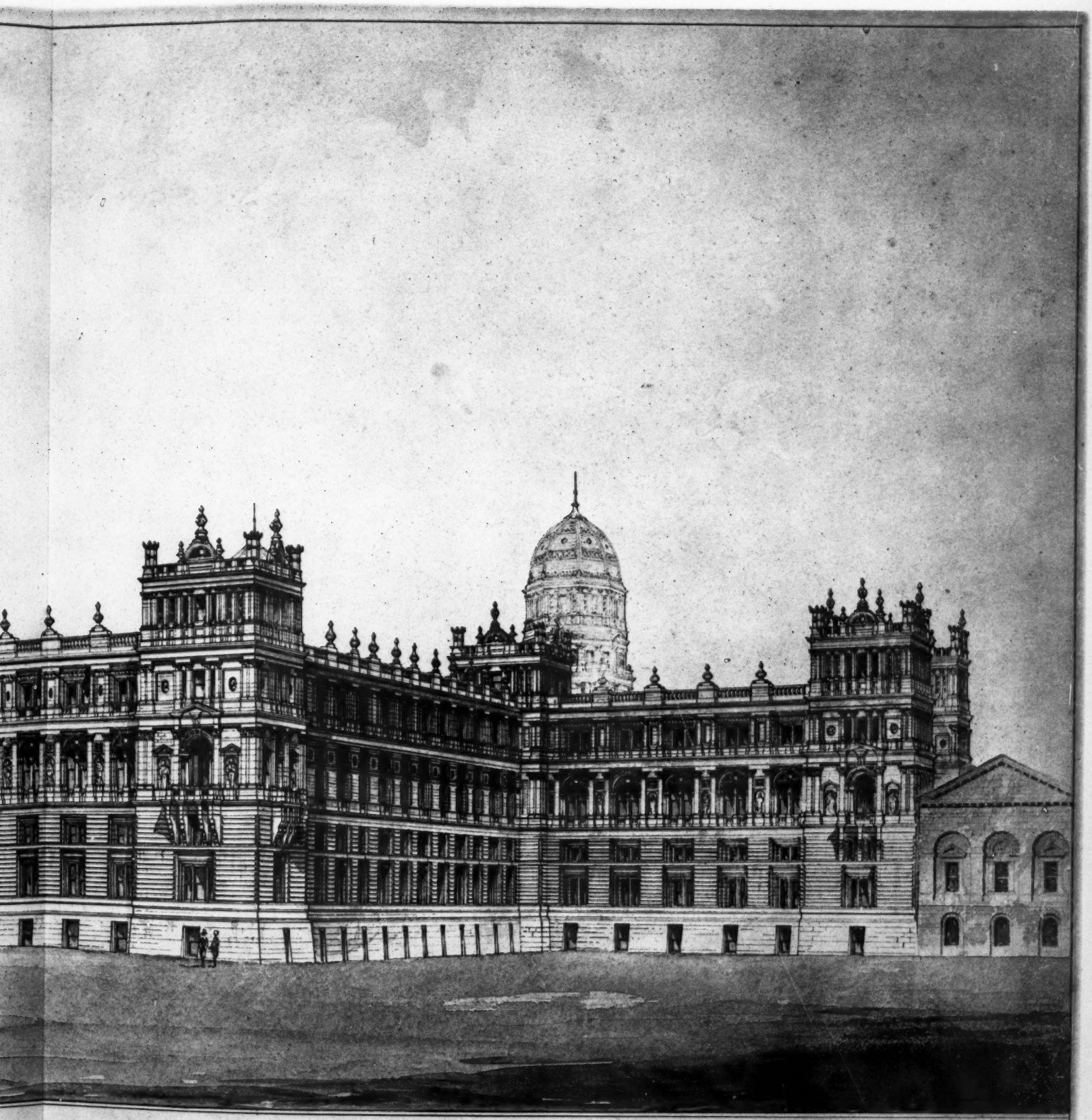
Fig. 5.

A FEW BITS OF OLD GLASS (*see page* 862).



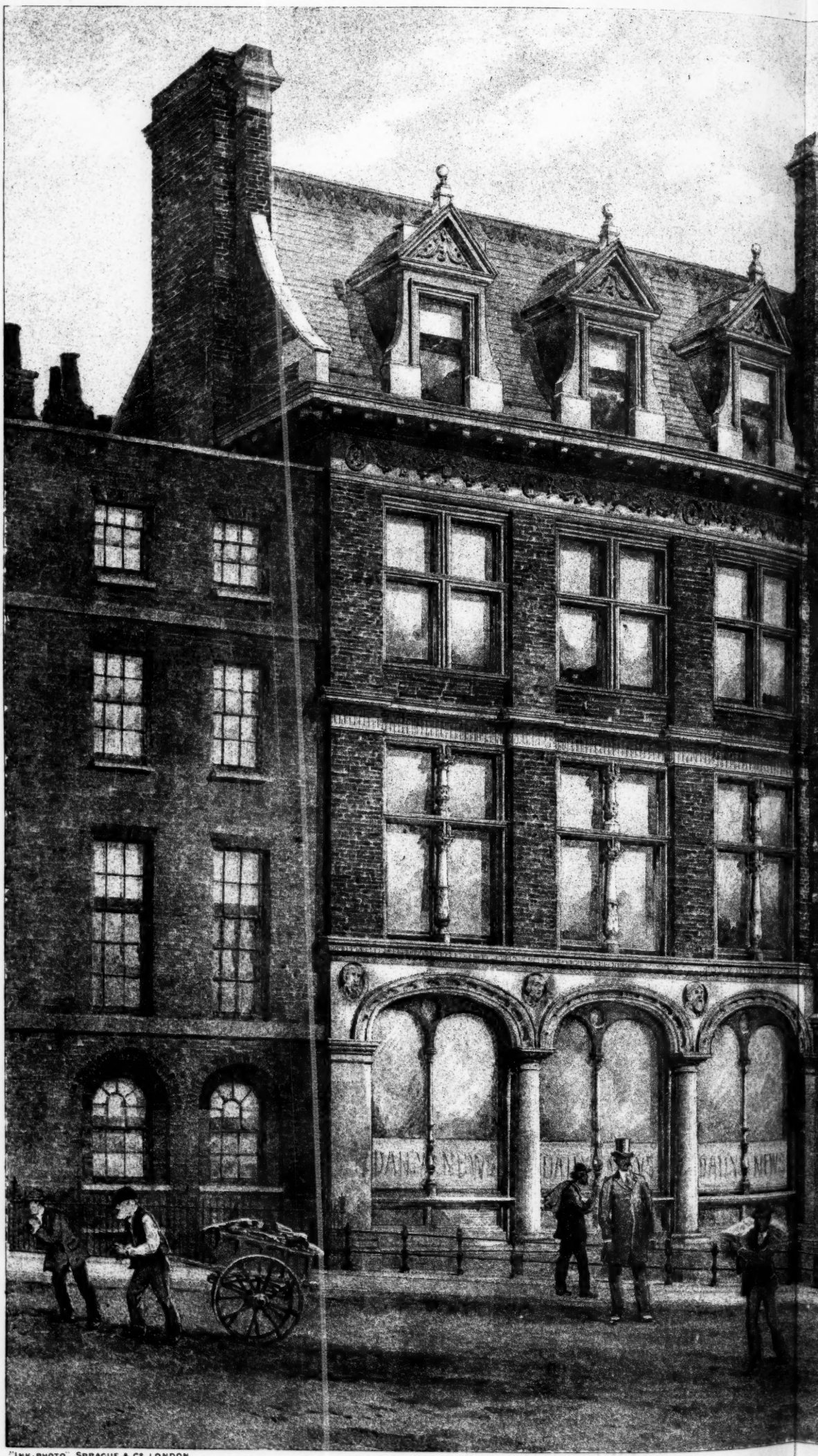
DESIGN FOR ADMIRAL
PARK

H. B. GARLING
1ST PREMIATED COMP
COMPET



RALTY AND WAR OFFICES.
RK FRONT.

NG. F.R.I.B.A. ARCHITECT.
COMPETITOR FOR WAR OFFICE.
COMPETITION. 1857.



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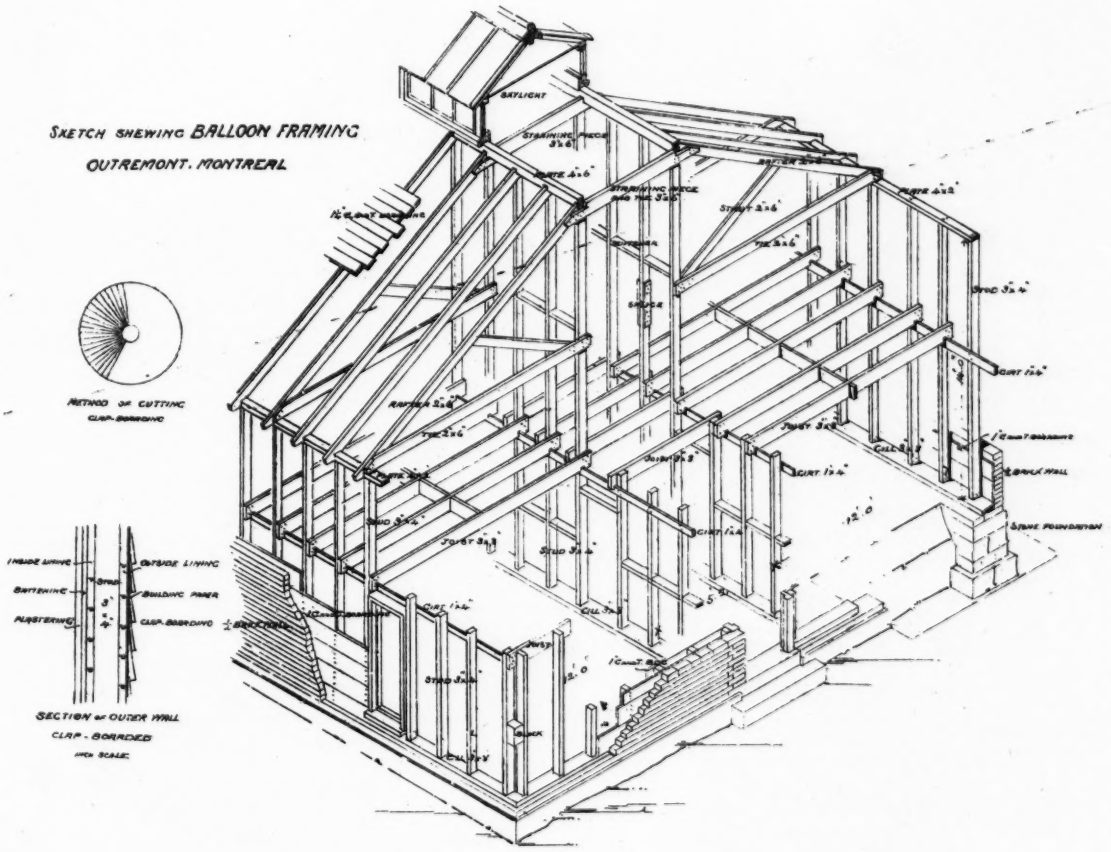
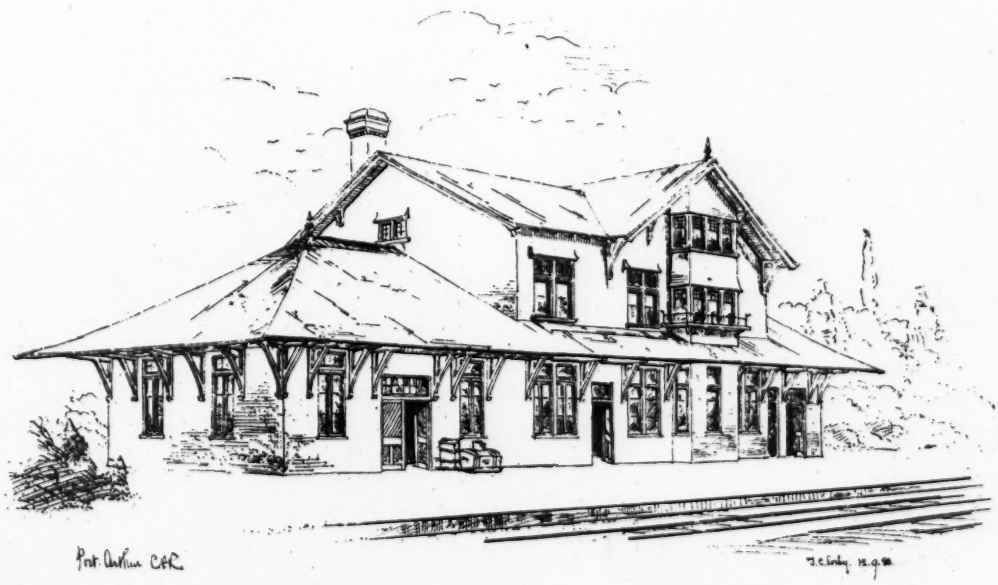
SKETCH SHEWING BALLOON FRAMING
OUTREMONT. MONTREAL





Wyman & Sons, Photo-Litho. C^t Queen S^t London, W.C.

CANADIAN TIMBER CONSTRUCTION.

I.

II.

BRONZE PANELS:

—

SUBJECTS FROM

THE ÆNEID

OF

I. *Why does he stop his unrelenting ears to my words? Whither doth he fly?*

II. *Then indeed Æneas weeps.*

THE ÆNEID

OF

VIRGIL.

—

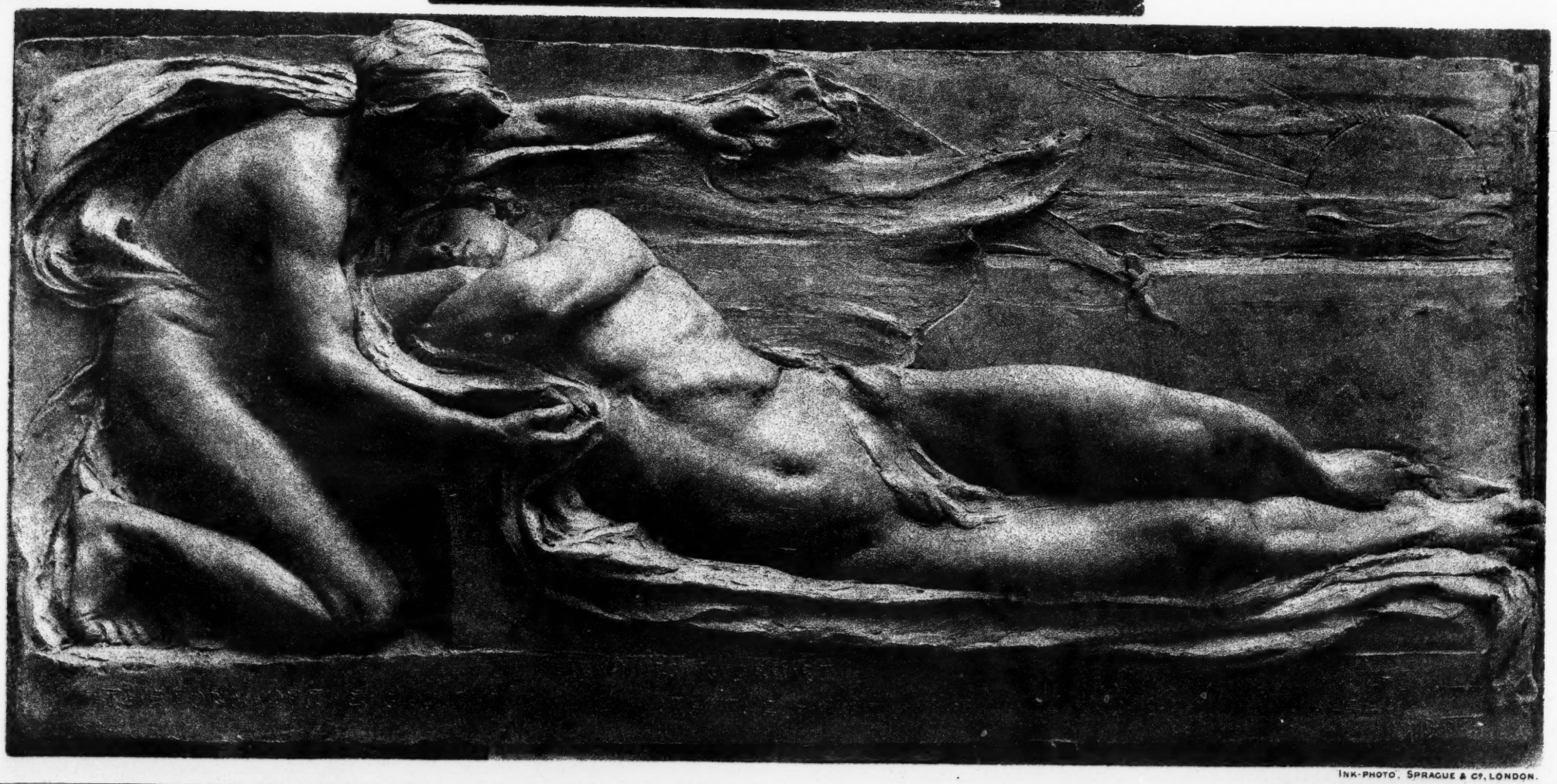
MR. HARRY BATES,

SCULPTOR.

II. *Then indeed Æneas weeps.*

III. *The form of the god, returning with the same aspect, appeared to him in his sleep.*

III



INK-PHOTO', SPRAGUE & Cº, LONDON.

Fig. 6A.

Fig. 6B.

Fig. 6C.

Fig. 7A.

Fig. 7B.

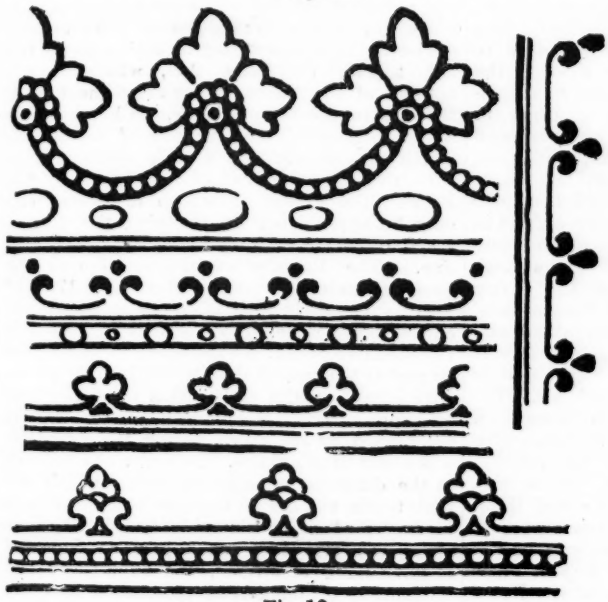


Fig. 10.

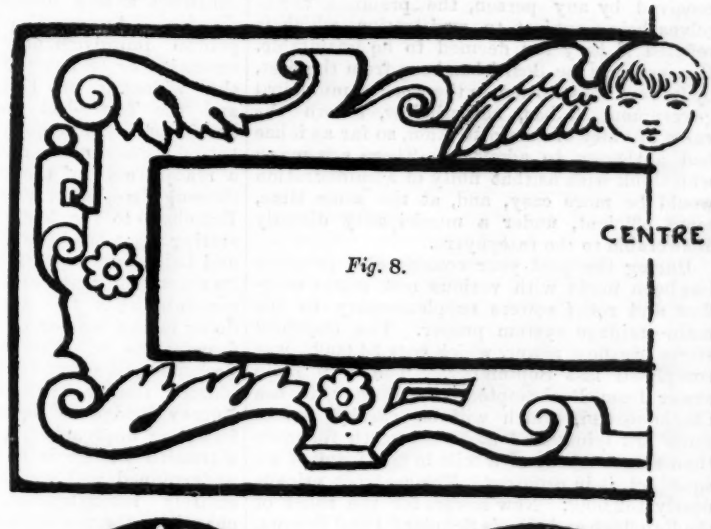


Fig. 8.

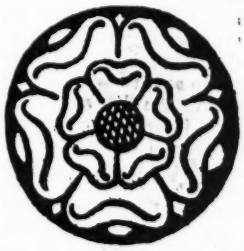


Fig. 9.

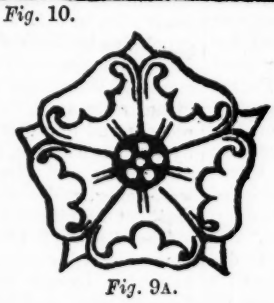


Fig. 9A.

Fig. 9B.

Fig. 9C.

Fig. 11C.

Fig. 11.

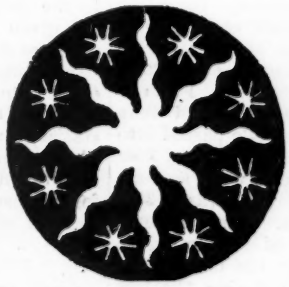


Fig. 11A.

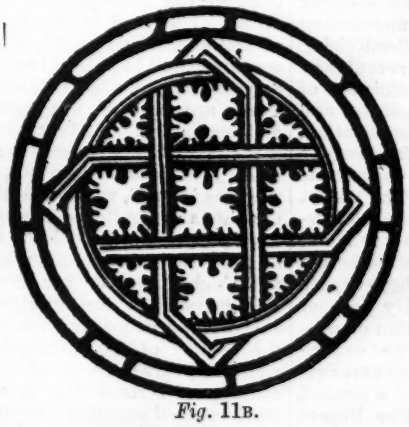


Fig. 11B.

Fig. 11D.

Fig. 11E.

Fig. 11G.

Fig. 11H.

Fig. 11I.

A FEW BITS OF OLD GLASS (*see page* 862).

THE ANNUAL REPORT OF THE METROPOLITAN BOARD OF WORKS.

OCCUPYING nearly 200 closely-printed pages, the Report of the Metropolitan Board of Works for 1884 is a record of much useful work done, and, on the whole, done well. Notwithstanding the anomalous constitution of the Board,—its members not being directly responsible to the ratepayers, but being the nominees or delegates of the various vestries and district boards of works,—and, although it only numbers forty-five members, it is entitled to the gratitude of Londoners for the manner in which it has performed the multifarious duties thrust upon it since its creation in 1855, now nearly thirty years ago. That it has earned the public confidence is proved by the fact that year after year Parliament entrusts it with new duties, some of which, however, are obviously only entrusted to the Board in the absence of a properly-constituted municipal governing authority for the metropolis. It may be news to some of our readers, for instance, to be told that the Board is the supervising authority, under the Infant Life Protection Act of 1882, of what are known as "baby-farms," the Board being empowered to fix the number of infants under the age of one year which may be received by any person, the premises themselves being subject to registration, which is refused if they are deemed to be unsuitable. Hampered as the Board has been from the first, by its very constitution, in the work of municipal government, it has, nevertheless, shown the value of unity of administration, so far as it has had authority to adopt it. There are many who think with us that unity of administration would be more easy, and, at the same time, more efficient, under a municipality directly answerable to the ratepayers.

During the past year considerable progress has been made with various new storm overflow and relief sewers supplementary to the main-drainage system proper. The Deptford storm overflow sewer, which cost 34,000*l*., was completed last September. The new main sewer from Roehampton-lane, Putney, to the Clapham-road, which will be carried across some low-lying land at Wandsworth for more than three-eighths of a mile in the form of an aqueduct, is in progress. The contract price is nearly 152,000*l*. New sewers for the relief of the Ranelagh and King's Scholars' Pond Sewers, passing through Piccadilly, Knightsbridge, and Chelsea, are in progress, and it was on the line of these works that the accident which flooded the District Railway the other day occurred. The cost of these sewers will be 96,300*l*. Various other extensive works of sewerage are in progress. As to the state of the Thames, into which all the metropolitan sewage goes, the Board's Report refers to the Report of the Royal Commission, and demurs to some of the conclusions of the Commissioners. But that the state of the river is very bad in hot weather is admitted by the Board, for, after mentioning the arrangements made last year for deodorising the river, the Report says,—"To prevent any difficulty in future from an insufficiency of chemicals, the Board has set up apparatus and machinery at the Crossness Pumping Station, which will enable it to manufacture promptly and in sufficient quantities the compounds required for deodorising purposes." The Report next briefly refers to the experiments to ascertain the best means of treating the sewage at the outfalls with a view to its purification before being discharged into the river. These experiments were going on when the hot dry weather necessitated the immediate application of deodorising agents to the sewage. The experiments have since been resumed,* and arrangements have been made for a trial of a method of purification on a large scale. The Report points out that the average daily discharge from the metropolitan outfall sewers amounts to nearly 160,000,000 gallons, and says that it is only an experiment on a large scale which can enable a judgment to be formed of the practicability of dealing satisfactorily with such an enormous volume of liquid. The Report next states what was done by the Board during 1884 for the prevention of Thames floods by compelling the owners of riverside property to raise the level of their wharf and quay walls. Dealing next with metropolitan improvements, the Report mentions the new street from Tottenham-court-road to Charing Cross, in connexion with which claims for property required amounting to 278,000*l*. were settled during the year. For the new street from Oxford-street to Piccadilly-circus, nearly all the property to be taken has been acquired, and "attention has been directed to the maintenance of the houses in a proper sanitary condition until the ground can be cleared." On the Newport Market area new dwellings for the accommodation of 2,000 persons of the artisan class have been erected. In connexion with the widening of Gray's Inn-road, three sites have been let for the erection of working-class dwellings, "the total purchase-money for them being 5,405*l*. for 999 years' leases at shilling rents." We are pleased to notice that there is a prospect of the new street from Southwark Bridge-road to St. George's Church in the Borough, for which powers were obtained in 1877, being proceeded with without further delay. The street will cut through the once disreputable and now insanitary district known as "The Mint"; the houses to be taken are of the worst class, and most of them have to be closed as soon as the Board obtains possession. It is but right to say that the delay in commencing this improvement seems to be due, not to the Board, but to the South-Eastern Railway Company, who obtained powers to construct a new branch railway through the district. Among the many other metropolitan improvements now in progress of execution or of negotiation may be mentioned the widening of Upper-street, Islington, and the Tower-hill improvement, the latter consisting in the removal of the block of houses between Postern-row and George-street, and in a readjustment of the levels, so that a complete thoroughfare, 60 ft. wide, may be formed from Eastcheap to the foot of the Minories. After stating what has been done under the Artisans' and Labourers' Dwellings Improvement Act and its amending Acts during the year, the Report recounts what the Board has done and is doing in the matter of Thames bridges. The foundations of Waterloo Bridge have been deepened and secured; Battersea Bridge, a dilapidated timber structure, is to be rebuilt; Putney Bridge is being rebuilt, at a cost, including approaches, of 240,000*l*.; and Hammersmith Bridge is having its southern pier underpinned, and is to have its superstructure entirely reconstructed. The Report also chronicles the unsuccessful efforts of the Board to get Parliamentary sanction for a subway or tunnel beneath the river at Shadwell and for a bridge at the Tower. An interesting part of the Report is that devoted to Parks, Commons, and open spaces, the total extent of such open spaces under the control of the Board being 1,835¾ acres. After reviewing the Bills affecting the metropolis introduced into Parliament during the session of 1884, some of which (especially the London Government Bill) are freely criticised, the work of the Metropolitan Fire Brigade is detailed. The staff of the brigade now consists of 589 men of all ranks, without reckoning 66 coachmen and 14 licensed watermen,—the latter engaged on the steam fire-floats on the river. There are now 55 fire-engine stations in the metropolis, besides 23 street stations with hose carts, and 127 fire-escape stations. From a table contained in the Report, we find that whereas in 1866, when the Brigade passed into the hands of the Board, the total number of fires was 1,338, of which 25 per cent. were serious, in 1884 the total number of fires was 2,289, of which only 9 per cent. were serious. The increase in the number of fires may, we suppose, be accounted for by the increase in the growth of the metropolis during the last eighteen years; the great decrease in the percentage of serious fires is undoubtedly due to the increased strength and efficiency of the Fire Brigade since it passed under the control of the Board. The Board's action with reference to the gas supply of the metropolis is next passed in review, and it is stated that the gas supplied by the companies has been found, when tested by the gas examiners appointed by the Board, to be equal in lighting power and purity to the requirements of the Acts of Parliament. Some additional testing-places have been established. After a passing glance at the subject of electric lighting, the Report deals with the question of water supply, and expresses regret that another year has passed without anything effectual having been done towards giving the inhabitants of London control over their own supply of water. Most of the London companies made arrangements during the year for extending the constant supply system, under the provisions of the Metropolis Water Act of 1871. After enumerating the tramway extension schemes which came under the consideration of the Board during the year, the Report narrates the operations of the Board with regard to the prevention of cattle diseases, the Board being, by the Contagious Diseases (Animals) Act of 1878, constituted the local authority to carry out the provisions of that Act within the metropolis. The action of the Board in regard to the very necessary supervision of dairies, cow-sheds, and milk-stores is next detailed, and then follow particulars of their action with regard to the control of slaughter-houses and offensive businesses; and a reference to the exercise of the powers they possess for regulating the manufacture, conveyance, storage, and sale of explosive substances within the metropolis. In the matter of the storage and sale of petroleum, benzoline, &c., the Board exercises considerable and very necessary authority, having regard to the dangers of storing such commodities in bulk, but it complains of the inaction of the Legislature in not carrying out the recommendations of the House of Lords Committee of 1883 on this subject. After recounting its action under the Infant Life Protection Act, which, in the opinion of the Board, needs amendment with the view to greater efficiency, the Report deals with the financial transactions of the Board, which are certainly on a scale commensurate with the large amount of work done by the Board,—the extent of whose operations can only be appreciated by studying the Report itself, of which we only here give a brief outline. The Board's expenditure during the year amounted to no less than 5,373,170*l*., of which sum nearly 2,000,000*l*. has been defrayed out of money raised by the issue of Metropolitan Consolidated Stock. An important section of the Report is that which details the Board's action with regard to the supervision of streets and buildings. The total length of new streets sanctioned by the Board during the year 1884 was about fifteen miles. The action of the Board in the direction of ensuring safety of life and limb to the visitors to theatres and music-halls is described at considerable length. Various other matters, such as the re-naming and re-numbering of streets, the supervision and demolition of dangerous structures, &c., are dealt with in this section of the Report, which concludes by saying that, whatever may be the future London local government, "in the mean time the Board has only to continue the course hitherto pursued, that is to say, to apply all its powers and energies, within the limits assigned by the Legislature, to the improvement of the metropolis and the promotion of the health, well-being, and comfort of the vast population resident within its borders."

The Report is supplemented by a number of appendices, including the Report of the Engineer (Sir Joseph Bazalgette), and that of the Superintending Architect (Mr. Geo. Vulliamy). In the first-named Report very full particulars are given of the sewer-works completed or in progress during the year, as well as of the new street improvements, new bridges, and other engineering works carried out by the Board. In the Superintending Architect's Report statistics are given of the building operations of the metropolis. One item of interest is that during the year only eighteen licenses for the use of Portland cement concrete for the walls of buildings were granted.

* Some particulars of them will be found in the *Builder* for June 6, p. 792, *ante*.

THE ARCHITECTURAL ASSOCIATION.

THE adjourned special meeting* of members was held on Friday, the 12th inst., Mr. C. R. Pink, the President, in the chair.

Mr. George Ashlin, of the Royal Hibernian Academy, was elected a member by acclamation, Mr. Harold Lane Brown being elected a member in the usual manner.

A vote of thanks was accorded to Messrs. Ernest George & Peto for permitting the members to visit Buchan Hill mansion, Sussex.

Mr. G. Somers Clarke, F.S.A., submitted a scheme for a monograph on Westminster Abbey. To produce the necessary measured drawings would entail considerable expense, but the work could be carried through at a nominal cost if he had the co-operation of the students of the Royal Academy, of the Royal Institute of

* See *Builder*, p. 793, *ante*.

British Architects, and of the Architectural Association. The illustrations would be in black and white, but to illustrate the royal tombs and other details coloured plates would be necessary; and for this work he believed he would be able to obtain the assistance of the students of the South Kensington Museum.

As the result of Mr. Clarke's appeal, the meeting authorised the issue of a circular asking for aid from those willing to assist in the work.

The Chairman intimated the reception of a petition signed by over fifty of the members, asking the Committee to arrange for Saturday excursions during the summer months. The matter had been before the Committee, who hoped to meet the wish of the petitioners.

Mr. H. Lovegrove, on the part of the younger members, had been deputed to impress on the committee the desirability of continuing the excursions. They would be very enjoyable during the summer time, especially if they could be carried out within twenty or thirty miles of the metropolis.

The meeting then proceeded to take up the business which had been adjourned from the 29th ult., viz., Mr. Cole A. Adams's motion for increasing the subscription from 10s. 6d. to 1*l.* 1s.

Mr. Hugh Stannus regretted that he would have to vote against the motion of a man whom they all respected so much, believing if it were carried it would be a victory for Mr. Adams which could be only less disastrous than a defeat. He hoped after Mr. Adams's long and excellent term of office he would not divide the Association into two hostile camps. He would, therefore, appeal to him not to press his motion, but to let it drop for a session. The members were all in accord with Mr. Adams in regard to the matter of education, but thought it would be better to postpone the resolution for one year.

Mr. Baggallay said the principal reason urged against the proposed increase of subscription was that it would press most upon the younger and poorer members, but when one entered the architectural profession he must have some money to spare beyond the premium which had been paid. Mr. Sedding had written to the papers stating that the Institute might subscribe largely in this direction, but many of the members of the Association would object to become Institute pensioners.

Mr. J. A. Gotch remarked that one of the reasons for increasing the subscription was for the publication of the papers, and if any one supported that perhaps he was the one. At the same time there appeared to be a considerable objection to their doing this, and he would therefore suggest that that object should be left out for the present. He hoped also that country members would not be compelled to pay a guinea, as the advantages of the Association were almost entirely to be derived by town members.

Mr. Cole A. Adams agreed to the withdrawal of the reference as to publishing the Transactions. The papers and discussions were so well reported and edited in the professional journals that there was no need for it.

Mr. J. D. Sedding believed that the reason for the increase was the advancement of education, but how could this be attained if many of the members withdrew? It would have the effect of debarring the poor student from taking advantage of the classes, and this would be to him a painful matter. In old days it was the dullard who went to the wall, but now he sheltered himself behind professional status. The amount proposed to be raised was a mere flea-bite compared to what was really required. He was sorry to hear Mr. Baggallay say that the Association should not receive any help from the Institute. If they raised this sum to remunerate paid lecturers and professors the Association would lose a grievance, for it was a shame that all the architectural education should be provided by the students and not by the architects. They were now like Lazarus at the gate, but if he became respectable Dives would take all the credit. They would be taxing themselves and playing into the hands of the Institute; they should, therefore, keep on agitating, and make much of their grievance.

Mr. E. W. Poley then moved as an amendment, — "That the question be deferred for twelve months." This was seconded by Mr. Arnold Tayler, and lost.

Mr. Brodie thought the decision on the question should be taken by a voting-paper.

The Chairman explained that under the rules a vote had to be taken by a show of hands.

Mr. Kemp next moved, as an amendment, that the subscription of members residing within twenty miles of London should be raised to one guinea, while that of members outside the radius should remain as at present.

Mr. Gotch seconded the amendment, which was opposed by Mr. Slater, on the ground that it was difficult to make a hard-and-fast rule on this point, an opinion with which Mr. Pratt coincided. This amendment was eventually withdrawn.

Mr. Stannus then moved as an amendment, "That this Association approves of the improvement and consolidation of the educational scheme, and authorises the committee to go to any expense, not exceeding 100*l.*, during session 1885–6, and postpones the question of increasing the subscriptions till some period towards the close of next session, when the experience gained during the session might guide us in our decision." There was some 200*l.*, he believed, in hand, and they could therefore afford to expend half of it in this manner. Mr. Stannus also read a letter from Mr. R. Phené Spiers, in which he stated that after careful consideration he had come to the conclusion that it was preposterous to ask the members for an extra half-guinea to make a university of the Association. It would be far better, Mr. Spiers added, to have special fees for each class, and if a vote were taken it should be by polling all the members.

Mr. Lovegrove seconded, and Mr. J. Douglass Mathews supported, Mr. Stannus's Amendment.

Mr. Blashill thought they were departing from what had raised the Association from the position it held thirty years ago to that which it now occupied. He could recall the time when only three members turned up at a lecture, and they ought not to lightly depart from the position they had attained. It would be a great mistake to attempt to do that which should be done by the Institute, by appointing professors and paid masters. At the same time the Association should manage its own affairs without asking for heavy subsidies from any other body. He believed the Institute would soon do that which they were thinking of, viz., supply facilities for the higher education of the profession. He would support the amendment as an experiment.

Mr. Atkin Berry opposed the amendment, considering it would not give a sufficient chance of showing what they could do.

Mr. Ellison opposed, and Mr. Blagrove supported the amendment, which after a few remarks from Mr. Cole A. Adams, was put to the vote, and lost by 54 to 60.

The Chairman then put the original motion for increasing the subscription, which was lost on a division, the numbers being 61 in its favour, and 70 against. The result was received with cheers and counter-cheers, and the proceedings terminated.

AN OLD FRESCO AT LINCOLN'S INN.

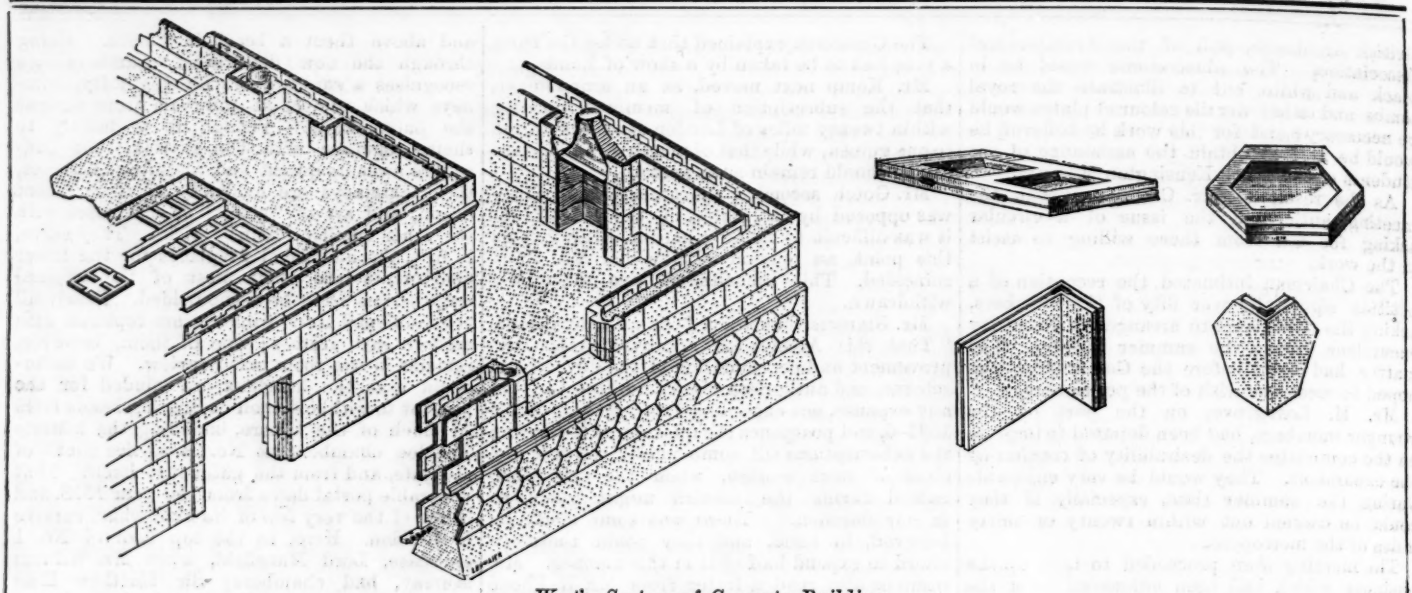
A SINGULAR discovery has just been made in Old-square, Lincoln's Inn. Between the gateway and the late Sir G. G. Scott's new chambers northwards stand Nos. 2, 3, and 4, Old-square, or, as it is styled in the existing tablet, Old Buildings. These chambers date from more than 250 years since. They are solidly built, and contain a great amount of large-sized oaken timber. Having enjoyed immunity from fire they preserve their pristine condition, but must now fall in pursuance of an extensive scheme for rehabilitating the Inn. Behind the later deal panelling of a room on the first floor of No. 3, to the left hand of one ascending the newel stairs in the turret, is exposed a contemporary fresco, painted on the plaster between the uprights and transoms. Extending from floor to ceiling, it covers, over all, some 70 square feet. Limited to their respective divisions, the subjects include figures, monsters, heads, *amorini*, birds, fruit, flowers, scrolls, and the like,—all well executed, though in somewhat crude colouring. The Cupid discharging his bow, the Pomona (or Ceres), the swinging boy, and the husbandman tilling the soil are very good. The style of the spade used by the last-named is in itself enough to mark the age of a curious mural decoration for whose rescue some effort should be made. To the right is a capital composition of two dolphins depicted in conventional guise, supporting a vase or fountain, whereon are two parrots, and above them a heart in flames. Going through the now dismantled chambers one recognises a *raison d'être* for the lofty chimneys which project at intervals from against the outer walls. Though it is mainly to them, together with the turrets, that Old-square owes its quaint and picturesque aspect, these chimneys are evidently of more recent origin, and are of "stock," as contrasted with the other smaller "kiln" bricks. They serve, in fact, the additional fireplaces for the lesser apartments into which most of the original large rooms have been subdivided. Nearly all the mullioned stone windows are replaced with modern sash frames; one of them, however, remains in the room under review. We understand that the benchers are minded for the present to withhold their destroying hands from so much of the square, including the historic Thurloe chambers at No. 24, as lies south of the gate, and from the gatehouse itself. That venerable portal dates from the year 1518, and is one of the very few of its kind which survive in London. Here, in the top floor of No. 1 staircase, Lord Mansfield, when Mr. William Murray, had chambers; Sir Matthew Hale occupied the set immediately over the archway, looking into what was then known as the Gatehouse Court. Views of the Gatehouse and of the portion that is now being demolished are comprised in Mr. Alfred Marks's admirable photographs of Relics of old London.

We are informed, singularly enough, that one or two sets of chambers in Old-square are freeholds.

THE LATE MR. HENRY EDWARD KENDALL, ARCHITECT.

THE profession has just lost by death one of its oldest members, Mr. H. E. Kendall, the event occurring on the 9th instant at his residence in Burlington-road, Westbourne Park. He was born in London, and, at the time of his decease, was within a few weeks of being eighty years of age. His father, however (also a well-known architect), lived to the almost patriarchal age of ninety-eight!

The son was pupil to the father, and, from the first, was a facile draughtsman. In 1833 he gained the silver medal of the Royal Academy for measured drawings of St. Bride's steeple, London; and, in 1835, he was rewarded by the Society of Arts by a gold medal for his "Design for a country mansion in the Elizabethan style," having already obtained two other medals in previous years from the same Society for his architectural drawings. Upon entering practice on his own account he was fortunate in securing an extensive and influential connexion, and was employed in erecting or altering many important mansions, including Knebworth, for Sir E. L. Bulwer (afterwards Lord Lytton); and at Shuckburgh, for Sir Francis Shuckburgh; at Weybridge, Sunbury, and Isleworth, for the Earl of Kilmorey; at Farnborough, the picturesque residence now occupied by the Empress Eugénie; also at Pope's villa, Twickenham; and at Ealing. He erected parsonages at Childerditch, Foulmire, Stockton (near York), Shelford, Stock, Uffington, &c.; and schools at Bury St. Edmunds, Cambridge, Willesden, Stanmore, Harlton, Good Easter, and elsewhere. Making this latter subject rather a speciality, he published an excellent illustrated book of "Designs," at a time when an improved skill and taste in such matters was beginning to develop itself. His churches are less numerous, but the following may be mentioned:—Kensal-green, Hayward's Heath, Brentwood, and St. Patrick's, Brighton. He was architect to the County Lunatic Asylums for Essex, Sussex, and Dorset, as well as other large public buildings. He was appointed District Surveyor for Hampstead so long ago as 1844, and consequently his was one of the earliest names on the list. During his later years he was greatly assisted in his professional engagements by his son-in-law, Mr. Frederick Mew, and thus they were associated together in works at Staunton Harold, for Earl Ferrers; Gordon House, Isleworth, for the Earl of Kilmorey; Maddingley Hall, near Cambridge; and in the erection of the new vestry-hall at Hampstead, &c. Among his pupils were Mr. J. T. Wood, the discoverer of the remains of the Temple of Diana at Ephesus, and Mr. J. B. Waring, who will be remembered in connexion with the Exhibition of 1851, and as having produced, in conjunction with Mr. T. R. Macquoid, an elaborate



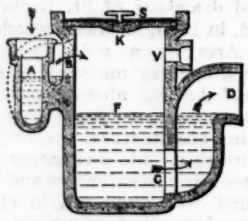
West's System of Concrete Building.

work on Renaissance architecture. The interment took place last Monday, in the family grave in Kensal Green Cemetery, not far distant from that of his father. J. DRAYTON WYATT.

THE "KENSINGTON" GREASE AND WASTE WATER TRAP.

ACCOMPANYING is a section of the trap made by Messrs. Jas. Stiff & Sons under this title. The object is to ensure entire disconnexion from the house-drain. The principle is that of a double trap with a grease receptacle between them. We extract the following from the description given by the makers:—

"When used inside the house it should be furnished with the air-tight adjustable cover shown in the above drawings, and should be placed under, or close beside, the sink, and as near as convenient to the external wall of house. A short length of stoneware or metal pipe should be carefully connected with the



ventilating opening V and carried through the external wall to the open air. This will not only relieve all pressure of foul air on the two water seals of the trap, but will minimise the unpleasantness of removing air-tight cover when necessary to cleanse the trap. The stoneware cover, K, rests upon an india-rubber seating, a small bar of galvanised iron, is placed upon the cover and turned up so that its ends slip into specially-prepared grooves in the upper part of trap; a very slight turn of the screwed tap, S, will then be sufficient to press the stoneware cover firmly down upon the india-rubber seating.

When used outside the house, the ventilating pipe, V, and the air-tight cover, K, are both dispensed with, and the trap is furnished instead with an open grid of galvanised iron.

Should foul air ever force its way through the strong seal D, C, it will at once make its exit into the open air through the open grating, or the ventilating pipe, V, and will be unable to exert any pressure on the separate water seal in the syphon inlet A, B."

It appears to us to be one of the most complete and effective traps for disconnexion that has been contrived.

"Lincrusta Walton."—This material has been very extensively used (about 10,000 yards) at the Hôtel Métropole, the bulk of it in the corridors and for bedroom dados. It has been used in Messrs. Spiers & Pond's Exhibition dining-room at the Inventories Exhibition, the whole of which is decorated with "Lincrusta." It has also been applied in the Marquis of Hamilton's room at the Exhibition, and to a room in "Old London."

CONCRETE WALLING.

SIR,—In your notice of a portion of our exhibits at the Inventions Exhibition, in your last issue [p. 826], you say that our slabs, "*when* * set edgewise on the outer and inner faces of the wall, and *keyed to its body*,* take the place of the movable wooden boarding used by Mr. Tall in his original system of concrete building." Such is not really the case, for when the slabs are *keyed to the body of the wall*, *i.e.*, when the concrete filling has set, they merely become a permanent facing to the wall, whilst the boarding used by Mr. Tall is entirely removed when the wall has become sufficiently hard.

The chief points about our system are that, instead of forming a casing of wood as is ordinarily done in concrete building, we make a casing of concrete itself in the form of slabs, the courses of which are keyed together by means of a quick-setting cement (such as White's Hygeian Rock) which is poured into key-holes formed for that purpose in the horizontal edges of each slab. These key-holes are so arranged that they shall coincide. The face of each slab may have mouldings upon it, or may be ornamented in any way, and when the filling behind it has set, forms a finished and ornamented face to the wall. The mouldings are applied to the face of each slab by inserting them (made beforehand) into its plastic mass. Heavy mouldings are built up in this system as extra courses.

The enclosed small-scale drawing shows an isometric view of work on this system, and the larger scale drawing shows the slabs in detail.

We recommend this system chiefly on its simplicity, and also because no casings either of iron or wood, and, therefore, no special concrete plant, are required. With this system any ordinarily intelligent mechanic might build his own dwelling.

F. & J. P. WEST.

THE "INVENTORIES."

SIR,—In your interesting article on "Prime Movers," in the *Builder* for June 6th [p. 789], I notice that the writer speaks of a certain car worked by compressed air as being on the Mékarski principle," from which your readers might be led to consider that that individual had been the inventor of a "system."

So far from this being the case, or the principle of imparting heat to the compressed air on its way to the working cylinder being the invention of Mékarski, it will, I have no doubt, be interesting to your readers to know that this plan was invented by an Englishman, one James Glazebrook, in the year 1797, as may be seen in his specification, No. 2,164 of that year, and in another which he took for further improvements, No. 2,504 of 1801.

It may hardly be credited, but it is, nevertheless, a fact that a few years since some Stock Exchange schemers and company promoters, as well as some financial speculators, aided by the efforts of a "highly scientific" consulting engineer, actually got up a company to purchase the "invention" of Mékarski for some 50,000*l.*, and asked the public to contribute 250,000*l.* to enable them to do so! This precious affair, on these facts as to the non-originality of the invention coming to the ears of those on the board who were not cognisant of the state of the case, quickly caused them to "bust up" the whole concern, since which time it has not been heard of until I see it cropping up at the "Inventories," whence it is more than probable it may emerge as a wonderful novelty, and one of the greatest inventions of modern times, especially if the original schemers and Stock Exchange speculators are still connected with it.

* The italics are ours.—F. & J. P. W.

Before the public listen to or accept any statements which may be promulgated in regard to it, let me strongly advise them to read over and consider Glazebrook's specifications, and then read and consider No. 3,498 of 1875, that of Mékarski. It will not take a man of ordinary intelligence many minutes to see that in 1797 and in 1801 the wonderful invention and principle of Mékarski in 1875 were recorded in the Patent Office by an Englishman at those dates. C. E.

PUMPS FOR CONTRACTORS' PURPOSES.

SIR,—Referring to the practical article on "Pumps for Contractors' Purposes," by Mr. Powis Bale, in your issue dated June 6th [p. 786], will you permit me, through the pages of the *Builder*, to ask that gentleman, or any of your readers who have had practical experience, what form of valves they recommend as the best for direct-acting steam pipes? and whether those worked by tappets, or moved by steam, are to be preferred? I am told that tappets have been known to get jambed, and even sheared off when the water has been dirty: can you tell me if this is so? I may add that the pumps are required for tunnel-work in Italy, where centrifugal or other simple pumps cannot be made available. A. E.

KELLY CASTLE.

SIR,—Kelly Castle, near Arbroath, referred to in last week's *Builder* [p. 824], is not a modern building, as supposed by the writer of the paragraph in which it is alluded to. It is at least as ancient as the majority of the "keeps" which form so picturesque a feature in Scottish scenery. It stands on a rising ground, sloping precipitously on the eastern side of the castle down to the Elliott Water. The "keep" commands a very fine and extensive view,—in one direction across the Tay estuary to the Fife Hills, and in another to the German Ocean. It was restored some years ago [Just so.—ED.] for the occupancy of a Dundee gentleman, and buildings were then added to make it more fit for modern requirements. Otherwise it retains all the interest which pertains to buildings of its character and period. G. S. AITKEN.

GAS FIRES IN HOUSES.

SIR,—The statement on p. 829 that gas fires are not sanitary arrangements is surely a misprint.* The gas fire of the present time, if properly made and used with a flue, is at least as sanitary and free from all possible objection as the best coal fire; the heat is purely radiant, and every trace of the products of combustion is taken out of the room; the chimney allows free ventilation, and it would be hard to say how a more perfect heating arrangement could be devised. Gas is beyond comparison superior to coal for a fire, in the fact that the heat is always at command and under the most perfect control, whereas with coal fires the exact heat required is not obtained in practice for one hour out of twelve. As regards ventilation and unobjectionable character of the heat, a gas fire leaves absolutely nothing to be desired. We have used gas fires exclusively for years throughout my own house, and the rooms are at least as sweet and well ventilated as any room I ever enter. It is possible to have a bad gas fire, and also to have a coal fire with a smoky chimney; but these exceptional cases cannot be taken as a guide in any way.

As to whether gas cooking will ever take exten-

* Not at all.—ED.

sive hold in general domestic service, there is no doubt that it will eventually do so, and also that it has done so already in those districts where trouble has been taken to bring the use of gas into notice. In many towns, notably Leicester, gas cooking is almost universal, and nothing more is needed than for the gas companies to assist intending users to make the use of gas universal. Gas has made its reputation, and its use is extending at an enormous rate. THOS. FLETCHER.

Warrington.

CASES UNDER THE METROPOLITAN BUILDING ACT.

SIR,—The attention of my client, Mr. R. L. Fedrick, has only just been called to a report under the above heading in your issue of the 23rd ult. [p. 743].

I beg leave, while admitting the substantial accuracy of your report, to qualify your accuunt of what the magistrate said in disposing of the case.

Mr. De Rutzen stated that he thought the buildings were of a substantial character, but that a few internal bricks might be objected to, and adjourned the matter that my client might arrange with the District Surveyor for their replacement.

This, as I am instructed, has since been done.

MARCUS A. LEWIS,
Solicitor for the Defendant.

LABOURERS' DWELLINGS.

SIR,—The Liverpool Corporation invite architects and others to submit designs for labourers' dwellings. The gross rental per room is not to exceed 1s. 3d. per week, including the use of all necessary sanitary arrangements. If it is possible to let decent rooms at such a rent, and obtain a fair return for outlay, the proper housing of the poor will no longer be a difficulty. I am, therefore, looking forward with much interest for the solution of this difficult problem. FRANK NEWMAN.

CENTRAL TOWERS.

SIR,—In your notice of my plan for carrying a central tower exhibited at the Inventories, a footnote is added, which states that I am only carrying a little further the plan adopted by the Normans at Tewkesbury and elsewhere. May I be allowed to point out that there is an essential difference between my plan and any of those adopted in Mediæval times, when the weight was always carried vertically on angle piers, as shown on my plan marked B, causing such an obstruction that 25 per cent. of the congregation cannot see the pulpit; whereas in my plan the tower is carried on great arches crossing each other, and having their abutments outside the area of the towers. ARTHUR BAKER.

SANTA MARIA DELLE GRAZIE, MILAN.

SIR,—A proposal is on foot to restore the church of Santa Maria delle Grazie at Milan. The cupola and western doorway are attributed to Bramante. It is proposed to remove the western doorway, as not agreeing with the style of the rest of the church, or as an alternative to restore the whole of the church in harmony with the design of the doorway, substituting stone for the terra-cotta in the exterior. The proposition is so monstrous that one would hesitate to believe it unless it were vouched for on good authority. There are a plan and a perspective view of the church in Callet and Lesueur's "Edifices Publics de Turin et Milan," plates 22 and 23, which is in the Institute Library. X.

PROVINCIAL NEWS.

Exeter.—For the past six weeks the premises of the Constitutional Club have been undergoing thorough internal embellishment. Heretofore the smoking-room accommodation was utterly inadequate to the requirements of a club numbering between 1,200 and 1,300 members; and it was determined to include a portion of the landing in the smoking-room. Mr. Ralling, of Exeter, was the architect called in, and, under his superintendence, the work and the improvement in the ventilation of the two billiard-rooms, as well as the decorations, have been carried out. Mr. W. R. Commings was the contractor for the alteration to the smoking-room, Mr. T. W. Rice for the work of ventilation in the billiard-room, and Mr. Edwin Algar has carried out the painting and decorating work.

Hulme. — Two memorial stones were on Saturday last laid in connexion with a new mission hall, which is in course of erection in Tatton-street, off Lower Moss-lane and Chester-street, Hulme. The new hall will be three stories high. There will be an infants' classroom to accommodate 200 children, a preaching-room, capable of holding a similar number of persons; a large schoolroom, with accommodation for 400 or 500 scholars; and class-rooms and other conveniences. The work is being carried on by Messrs. Peace & Norquoy, from plans drawn by Messrs. Mangnall & Littlewoods, and it is hoped the hall will be ready for opening by the end of August.

Kingstone Bagpuize, Berks.—New kennels (for fox hounds) and feeder's cottage have lately been built here for the Old Berks Hunt, from plans and under the superintendence of Mr. F. H. Barfield, F.S.I., architect. The buildings are of brick and slate, and are very complete. The principal floors are laid with "Imperial stone" paving. The lodging-houses have white glazed brick dados, and are fitted with iron bedsteads. The food is cooked and the water pumped by steam, and special attention has been given to the drainage. A neat iron fencing, with cast-iron coping, is fixed to the yard walls and the grass yard for young hounds. Extensive alterations have also been made to the Huntsman's and Whip's houses and the stabling near, and the cost of the whole, including boundary walls, new road, &c., has exceeded 2,200*l.*

DISSENTING CHURCH-BUILDING NEWS.

Bolton. — Bridge-street Wesleyan Chapel, Bolton, has been re-opened, after internal reconstruction, at a cost of about 3,500*l.* The plastering and decorating work was let to Mr. Warburton; Mr. Robert Walsh (Daubhill) received the order for the heating apparatus; Mr. Alfred Glover the stonework; Mr. Joseph Bell the plumbing and glazing; the remainder,—joiners' work,—being given to Mr. W. Townson. Messrs. Forster & Andrews (Hull), were requested to build a new instrument, at a cost of about 800*l.* The chapel will accommodate, as before, about 900 persons. The work has been carried out under the personal supervision of Mr. Ormrod, architect, Bolton.

Abercorn.—By the demolition, commenced on the 1st inst., of Abercorn Free Church, Woodend, one of the few old land-marks of the Disruption will be swept away. From 1843 to May, 1878, the congregation was an acknowledged charge under the Free Church, but after the death of their last minister, the Rev. Archibald Currie, the membership fell off considerably; so much so that the congregation were obliged to petition the Assembly of 1878 to reduce the church to a preaching station. This request being granted, the church has remained as such. Within the last few years, however, the membership has so rapidly increased that the congregation is now in a position to build an edifice of more prepossessing appearance than the one in which they have been worshipping so long. The new church will be a parallelogram, with octagonal end, where the pulpit is placed,—the front gable to the roadway being buttressed and terminated with a small belfry. The accommodation of the new church is about 400. The architect is Mr. Hippolyte J. Blanc, of Edinburgh.

Brighton.—The Building Committee having decided, upon the recommendation of the architect, Mr. Arthur Loader, of Brighton, to complete the restoration of Queen's-square Congregational Church, which had to be temporarily stopped for the want of funds, orders have been given to Mr. John T. Chappell, builder, of Lupus-street, London, and Brighton, to proceed with the work at once.

Bagworth (Leicestershire).—A new Baptist Chapel is to be erected here, together with schoolroom and two class-rooms. The new buildings are designed by Mr. John Wills, architect, of De[illegible] in the Early Gothic style, and will occupy [illegible]ame site as the old chapel. The cost will be [illegible]*l.*

VA[illegible]ORUM.

THE "City of Lond[illegible]n Directory" for 1885 (London: W. H. & L. Collingridge) is the fifteenth annual issue of that exceedingly valuable and creditably-produced work of reference. It is the City Directory *par excellence*, and in it may be found information as to City institutions not elsewhere easily accessible. It is accompanied by a map on a large scale, prepared from the Ordnance Survey, showing every street in the City, with the boundaries of each ward and parish. A speciality of the work is the guide to the Livery companies, giving the officers of the City guilds, with the history of their halls, charters, arms (illustrated), charities, and schools. —— "The Twenty-fifth Annual Report of the Amalgamated Society of Carpenters and Joiners" from December, 1883, to December, 1884 (Manchester: Co-operative Printing Society, Balloon-street), is a valuable record of the work and position of one of the leading trade-unions of the country. During the year embraced by the Report the Society has opened thirty-three new branches. There was a gain of 1,945 members on the rolls, the total membership being 24,784. The net income for the year was 59,317*l.*, and the net expenditure 57,933*l.* In "unemployed benefit" the Society paid during the year 23,262*l.*, or 18s. 9d. per member as against 14s. per member in the previous year. In "sick benefit" the sum of 14,852*l.* was expended, or about 12s. per member. In "trade privileges,"—an item which is explained as covering the whole of the expenses of "trade movements," whether of a hostile or peaceful character,—2,140*l.* were spent, or about 1s. 9d. per member.——The "Report of the Health of Liverpool, during the year 1884," by J. Stopford Taylor, M.D., Medical Officer of Health for the City and Port (printed by A. Russell, Son, & Bayley, Moorfields, Liverpool), has just reached us. It is an interesting record of valuable work done, and is notable for the statement with which it commences, viz., that "the year 1884 will be memorable for the low death-rate of the city, 25·1 per 1,000, being the lowest on record." There is, of course, still room for improvement, of which there seems to be promise.——Several trade books have reached us lately. Mr. G. Shrewsbury, of 122, Newgate-street, sends us a pamphlet in which his "Nonpareil" Gas Conservatory Boilers, and other hot-water apparatus and appliances, are described.——From Messrs. Sharp & Co., of 11, Holborn-circus, we have received a pamphlet issued by them, entitled "The Science of Sanitation in Plain Language for the British Householder." Persons of the numerous class to whom it is addressed will find some useful hints in it.——Messrs. John Warner & Sons, of the Crescent Foundry, Cripplegate, have sent us descriptive catalogues of their boring tools and machinery and mining and quarrying machinery, which contain a good deal of information as to what may be effected in those branches of engineering. —— The Æolus Waterspray Company, of 235, High Holborn, have issued a new catalogue of their increasingly-used system of ventilation.—— That "accidents will happen" in builders' yards and workshops, and in the execution of building operations generally, many of our readers know from sad experience. It is often of vital importance to have readily at hand the means of dressing wounds and of making the patient comfortable until a doctor arrives. The "Red Cross Pocket Ambulance," manufactured by Messrs. Russell & Everett, of Roehampton-street, Vauxhall, and which costs no more than a shilling, will be found very useful in giving first aid to the injured. Under the auspices of the St. John Ambulance Association, many thousands of persons of both sexes have qualified themselves to render that aid, and their power of usefulness will be increased now that this compact pocket ambulance is within their reach.—— The "Trade and Industrial News," the oldest established paper connected with industry in Russia, has taken a new departure. Till very recently it was published in Moscow, in the Russian language, once a month only, but it has been found that the demand for current information was not met with issues so distantly separated as a whole month, and now the proprietors have commenced a weekly edition to supplement the monthly one. The weekly numbers will deal with current topics of the day, while the monthly ones will more especially be devoted to explanations of engineering enterprises and publication of details, with illustrations, of new machinery and inventions. Mr. J. W. Vickers, of 5, Nicholas-lane, Lombard-street, is the sole English representative of the paper.

Ensilage.—A gold medal has been awarded to Messrs. F. W. Reynolds & Co., of Acorn Works, Edward-street, Blackfriars-road, London, at the Concours Générale d'Agricole, Sétif, Algeria, for their patent mechanical appliances for compressing silage, for which they have also been awarded the medal at Montpellier, France.

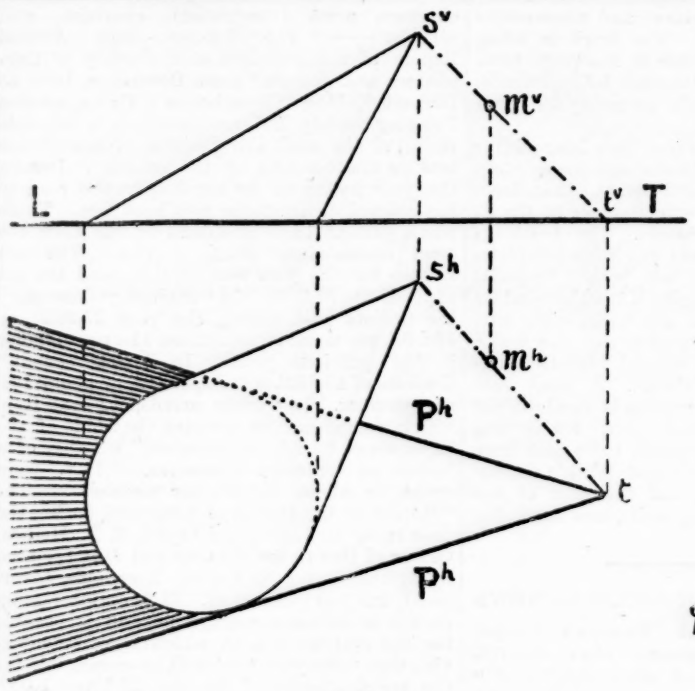


Fig. 103.

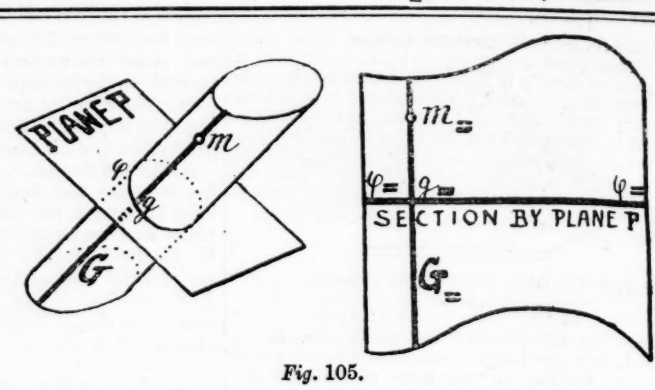
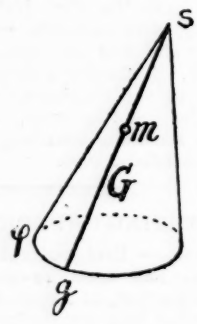


Fig. 105.



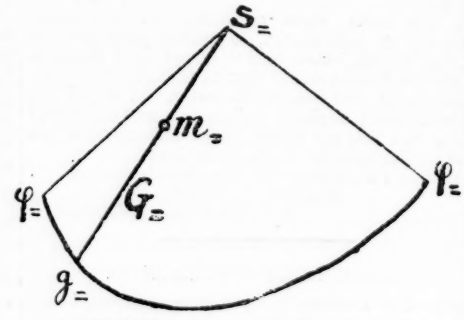


Fig. 106.

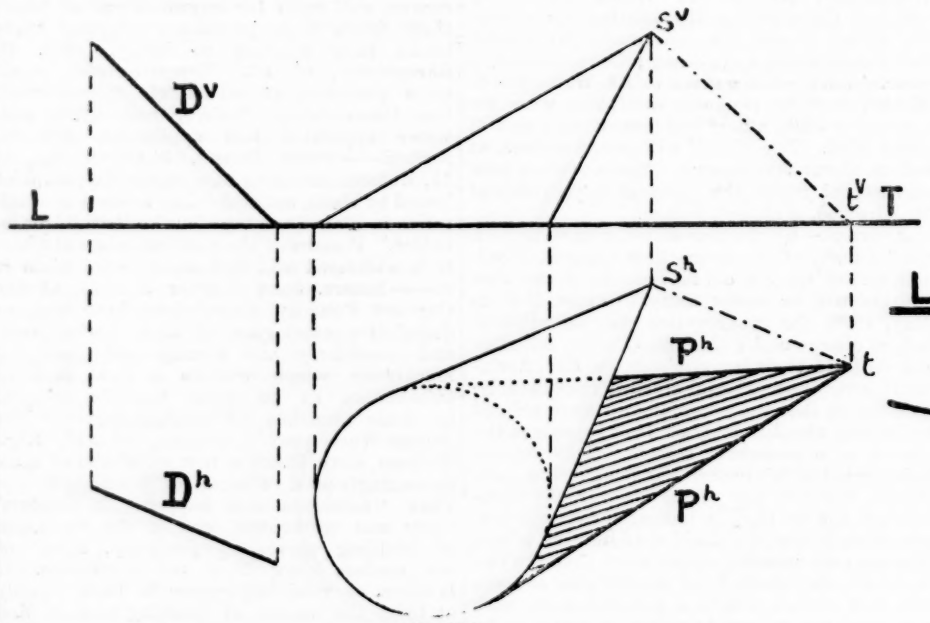


Fig. 104.

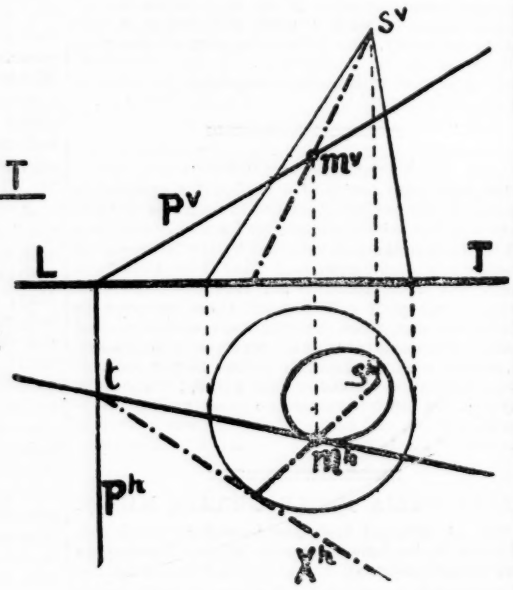


Fig. 107.

The Student's Column.

DESCRIPTIVE GEOMETRY.—PART II.

IV.

Find a plane, P, *tangent to the cone, and passing through a point, m, outside the cone.*

WE join the point *m* to the apex S of the cone; P^h will pass through *t*, foot of the line *m s*, and be tangent to the base of the cone. We see by this figure that there are two planes P tangent to the cone through the point *m* outside it. This problem is identical *with find the shade of a cone lighted by a candle;* the limits of the shade are the generators of the cone along which the planes P are tangent. (See fig. 103.)

Find a plane, P, *tangent to the cone and parallel to a given line,* D.

We take through the apex S of the cone a line, *s t*, parallel to the given line D; the tangent plane P must contain the line *s t*, therefore P^h will pass through its foot *t* and be tangent to the base of the cone. As in the preceding problem there are also two planes P tangent to the cone. This problem is also identical with *find the shade of a cone lighted by the sun's rays;* and the limits of the shade are the generators along which the planes P are tangent. (See fig. 104.)

Intersection of Surfaces in general.

The method followed for finding the intersection of two surfaces, S and S^1, consists in cutting them by a third surface, X, the intersections of which with S and S^1 can be readily found; then the points where the two intersections meet are, of course, points of the intersection of the surfaces S and S^1 themselves. The auxiliary surfaces X are most often planes, but not always; in some cases, for instance, spheres are selected. It is those simple cases of intersection we shall begin to study.

Sections of Cones and Cylinders by Planes.

Remember that it is very easy to change the vertical elevation plane for both these surfaces. For the cone, it means only *making a new elevation of the apex;* for the cylinder, *a new elevation of one generator.* Remember also that sections by planes are easiest when the planes are perpendicular to the elevation plane, for all the elevation of the section falls on the vertical trace of the plane. We beg, therefore, in the following diagrams to assume that the elevation plane has been selected perpendicular to the plane of the section.

For the purpose of constructing cones and cylinders out of card-board or sheets of metal, we shall say a few words about developing these surfaces.

If you cut a cylinder by a plane, P, perpendicular to its generator, and then cut the surface along a generator, you will find, in developing the cylinder, that the outline of the section by the plane P will develop in a straight line, and that all the generators of the cylinder will be perpendicular to that developed section. On the development any point, *m*, of the cylinder will be situated on the same generator as before and at the same height above the straight line of section as its former distance from the plane P. (See fig. 105.)

To develop a cone, cut its surface along a generator of same; any point, *m*, of its surface will be on the developed cone on the same generator, and at the same distance from the apex. (See fig. 106.)

To avoid repetitions we shall call I *the sections of cylinders or cones by planes, m any point of the section,* P *the plane of the section,* G *the generator on which the point m is situated. We shall indicate by the sign — placed below the letter as in* $I_{_}$, $m_{_}$, *the sections and points after the plane* P *has been turned down and laid flat on one of the projection planes, so as to get the real shape and dimensions of the section. In the developed surfaces we shall place the sign = below the letters which indicate the generators, the sections, and the points; we shall have, therefore,* $G_{=}$, $I_{=}$, $m_{=}$.

The tangent to the intersection of two surfaces, S *and* S^1, will be situated in each of the planes X and Y, tangent the one to surface S, the other to surface S^1. We conclude, therefore, that the tangent to the intersection of the surfaces S and S^1 will be the intersection of the planes X and Y.

In sections of curved surfaces by planes, *the tangent to the section* will be the intersection of the plane P of the section by the plane X tangent to the surface of the object. For the section of a cone, for instance, we shall find the tangent to the section in the point *m* pass through *t*, the point where X^h cuts the plane of the section P. The plan of the tangent to the section is, therefore, m^h, *t*. (See fig. 107.)

RECENT PATENTS.

ABSTRACTS OF SPECIFICATIONS.

92, Destroying Noxious Gases. S. C. Dean.

Sewer gas or air contaminated with infectious matter is drawn through a ventilator, and rendered harmless by heat. The ventilator is preferably in the form of a cylinder, about as long as three times its diameter, fitted with a gas jet at top and bottom. Above the upper gas jet it is loosely filled with asbestos, supported on wire gauze. The upper jet only is lighted, a door being provided for that purpose near the top. The gas from the lower one mixes with the impure air, and is burned with it, while passing through the red-hot asbestos. In some cases a receptacle containing coke wetted with lime-water or caustic potash is placed above the ventilator to absorb the noxious gases generated. The ventilator is applicable to hospitals and works as well as to sewers. For ventilating soil-pipes and cesspools it may be smaller, and may be provided with a lamp instead of gas jets.

296, Ventilator and Air Filter. J. Walsh.

The ventilator consists of a blind made of fabric, horsehair, grass, or other substance, which is rolled on a roller, and has at its bottom a lath of wood or metal fixed to the sash by a screw, and bent up to clear the centre rib. In opening the window, the blind pulls down with it, and so prevents soot, &c., from entering the room. In some cases the blind is fixed in a recess above the window, or it may be fixed to the bottom sash as well. It may also be applied to doors, railway-carriages, or any sliding window.

394, Wall Facing Bricks. W. Parry.

Each brick is made with a weathered projection in front, which slightly overlaps the bricks below for the purpose of preventing the wet from permeating the joint. The vertical joints are protected by a groove formed in the sides of the projection, which provides a channel to intercept water leaking through, or which may be filled with pieces of glazed brick.

578, Wood Staining and Varnishing. M. Williams.

A solution of varnish gums in methylated spirit coloured by aniline dyes is used. This varnish is applied in coats, and rubbed down with sand-paper after each coating. In imitation of different woods a black stain is first applied irregularly to imitate the grain of the wood required, and then the varnish suitably coloured is applied. All kinds of wood may be imitated.

3,004, Door Knobs. C. Priestland.

The knob is made in two parts, the neck and an expanded elliptical part. The latter is pressed into its shape from a flat circular blank. Projections are made upon the neck, and engage in slots or a groove, so that when pressed together the parts are securely locked so as to form a door-handle of the ordinary shape.

12,935, Auger Bits. A. M. Clark.

The auger-bit is formed by a single spiral blade mounted on a central stem terminating like a gimlet at its end. From the chisel-edge of the spiral blade it is very effective, and its form allows it to be used either by hand or machine, and it can be easily sharpened and repaired.

APPLICATIONS FOR LETTERS PATENT.

June 5.—6,833, W. Blackwell, Improvements in Window Sashes.—6,837, J. Corbett, Jointing and Connecting Lead or other Metallic Pipes without the use of Solder.—6,842, C. Grimmet and J. Cook, Window Fastener.—6,844, M. Schumann, Improved Metallic Paint.—6,849, J. Denny, Manufacture of Bricks.—6,859, J. Lorrain, Heating, Cooling, and Ventilating Apparatus.

June 8.—6,889, W. Paul, Window Slide Ventilator.—6,928, A. Ashwell and C. Cross, Indicating Door Fastenings for Apartments and Closets.—6,930, A. Allom, Draining and Cleansing Swimming Baths.—6,955, S. Groves, Improved Method of Producing Repoussé Work.—6,962, W. Chalk, Improvements in the Treatment of Granite and Granitic Stone.—6,963, H. Penrice, Rock Tunnelling Machinery.

June 9.—6,981, R. Hill, Improved Sewage Trap and Gully.—7,033, G. Hookham and W. Tonks, Lines or Cords for Suspending Window Sashes, Chandeliers, &c.

June 10.—7,052, M. Ingram, Automatic Flushings for Lavatories, Closets, Drains, &c.—7,053, M. Ingram, Discharge and Waste Arrangements for Baths, Lavatories, Cisterns, &c.—7,055, H. Johnson, Combined System of Warming and Ventilating.—7,066, E. and G. Warburton, Panel Planing and Thicknessing Machines.—7,070, W. Morrison and J. Benn, Construction of Folding Chairs.—7,082, J. Ebner, Composition for Securing Parquet Flooring to Stone, Concrete, Wood, &c.—7,086, H. Haddon, Joiner's Clamp and Screw Press.

June 11.—7,106, A. Patrick, Manufacture of Sewage Pipes, Glazed Bricks, &c.—7,111, G. Wigg, M. Steele, and W. Wigg, Manufacture of Pigments.—7,124, E. Marland, Securing Tops of House and other Chimneys.—7,148, C. Wilkes and W. Millar, Metallic Compounds for Flooring, Paving, &c.

PROVISIONAL SPECIFICATIONS ACCEPTED.

16,444, R. Holt and Others, Apparatus for Preventing Smoky Chimneys, Ventilating Rooms, &c.—5,007, A. Clark, Caisson or Crib for Sinking Wells, Shafts, &c.—5,354, E. Robbins, Novel Manufacture of Decorative Concrete.—5,956, W. Lester, Astragals or Glazing-bars for Roofs, Windows, and other Lights.—6,025, W. Montgomery, Fire-resisting Cement.—6,225, E. Bellow, Latches for Doors, Gates, &c.—6,465, G. Haywood and G. Williams, Ventilating Apparatus.—2,360, H. Fletcher, Improved Set Square.—4,750, A. Elford, Paving Blocks.—5,420, C. Falkenstein, Combined Electric Bell-push, Incandescent Lampholder, and Switch.—5,805, J. Steward, Sextants and other Reflecting Instruments for Measuring Angles.—5,913, H. Waldron, Attaching Door-knobs, &c., to Spindles.—6,146, H. Haddon, Workmen's Controlling Apparatus or Timekeeper.—412, H. Whiteley, Weather Guards or Draught-preventers for Doors, Casement Windows, &c., also applicable for Preventing Slamming.

COMPLETE SPECIFICATIONS ACCEPTED.

Open to opposition for two months.

11,276, W. Ayres, Window Sash-weights.—11,515, J. Eaton, Fastening Sliding Sashes.—15,197, E. Turner and J. Reynolds, Combined Circular Rack and Band Machine for Sawing Timber.—3,932, J. Homan, Improvements in Fireproof Floors.—5,579, A. Diss and H. Goodey, Improvements in the Construction of Fireproof Hearths and other Fireproof Parts of Buildings.—10,910, H. Pearson, Water Meters.—11,417, E. Colton, Stench Traps.—11,722, J. Hamilton, Wood Planing Machinery.—12,466, F. Hofmann, Sawing Machinery.—13,411, F. West, Liquid Concrete Elevator.—5,728, E. Capitaine, Cooling and Ventilating Apparatus.—5,832, H. Haddan, Disinfecting Water-closets.

RECENT SALES OF PROPERTY.

ESTATE EXCHANGE REPORT.

JUNE 8.

By MULLETT, BOOKER, & Co.

Hyde Park-square—No. 36, with stabling, 48 years, ground-rent 25*l.* 4s. £5,000

By DEBENHAM, TEWSON, & Co.

Sidcup—Ground-rents of 32*l.* a year, reversion in 90 years 760
Limehouse—Dixon-street, &c., ground-rents of 94*l.* a year, reversion in 94 years 2,110
Peckham—Shards-road, ground-rents of 7*l.* a year, reversion in 52 years 155
Battersea Park-road—Ground-rents of 24*l.* a year, reversion in 43 years 750
Horselydown—Church-grove, &c., ground-rents of 41*l.* a year, reversion in 44 years 920
Bow—St. Stephen's-road, the "Earl of Eglington" public house, freehold 4,200
Hackney-road—126, 128, and 148, freehold 2,450
Spitalfields—80, Brushfield-street, freehold 1,040
Whitechapel—14 and 16, Osborne-street, freehold 2,510
Tower Hill—22, King-street, freehold 710
11, Queen-street, freehold 510

By SIMMINS & GASSON.

Horley, Surrey—3, The Grove, freehold 1,150

By ROBSON & PERRIN.

Finsbury Park—172, 201, and 209, Blackstock-road, 85 years, ground-rent 32*l.* 1,400

JUNE 9.

By T. G. WHARTON & SHERRIN.

Upper Holloway—An improved ground-rent of 27*l.* 10s., with reversion 485
Kilburn—181, Belsize-road, 65 years, ground-rent 10*l.* 420

By A. RICHARDS.

Tottenham—5, 7, and 8, Gloucester-terrace, 39 years, ground-rent 36*l.* 600

By C. & H. WHITE.

Camberwell—42, 44, and 46, Camden-grove North, 76 years, ground-rent 7*l.* 4s. 520

By DRIVER & Co.

Chelsea—1 to 5, Foundry-place, freehold 650
Sheerness—The "Hit or Miss" public-house, freehold 160

By HARDS, VAUGHAN, & JENKINSON.

Houndsditch—5 to 10, Fireball-court, freehold 2,140

By DOWSETT & WOODS.

The freehold cottage, "Leslie Lodge," with grounds 1,050

By TOWERS, WILLIAMSON, & Co.

Pimlico—120, Ebury-street, 38 years, ground-rent 12*l.* 985
122, Ebury-street, 38 years, ground-rent 12*l.* 1,005

By DEBENHAM, TEWSON, & Co.

Marden, Kent—"Widehurst Farm," 231 a. 1 r. 7 p. freehold 5,000
Rotherfield, Sussex—"Pinehurst," "Limney," and "Stone" Farms, containing 339 a. 2 r. 24 p., freehold 8,000
"Great Ease Farm," 91 a. 0 r. 2 p., freehold 2,000
Castlehill, "Brickfield Farm," 15 a. 1 r. 10 p. 660
Heathfield, "Marl Green" and "Hugget's" Farms, 284 a. 3 r. 6 p., freehold 4,500

JUNE 10.

By E. EVANS.

Putney—22 and 24, Lower Park Fields, and ground-rents of 11*l.* 17s. a year, term 59 years 650

By G. B. SMALLPIECE.

Near Haslemere—A plot of freehold land, 2 a. 3 r. 7 p. 142

By DANIEL SMITH, SON, & OAKLEY.

Forest Hill—The residence called "Danesfield," 80 years, ground-rent 12*l.* 10s. 1,250
The residence called "Springfield," 80 years, ground-rent, 17*l.* 10s. 1,150

By RUSHWORTH & STEVENS.

St. John's Woods—72 and 74, Clifton-hill, freehold 1,595
84 and 86, Clifton-hill, freehold 1,500
Near Elstree—Two plots of freehold land 1,320

By J. G. & A. PREVOST.

Mile End—Copley-street, the "Princess of Wales" public-house, 57 years, ground-rent 3*l.* 1,160
3, Nicholas-street, 45 years, ground-rent 3*l.* 10s. .. 360
Moody-street, a plot of freehold land 155
Ilford—A plot of freehold land 25

By HOBSON, RICHARDS, & Co.

Clapham—3, Beauchamp-road, 95 years, ground-rent 7*l.* 13s. £470
Westbourne Park—10, Appleford-road, 80 years, ground-rent 7*l.* 10s. 200
Brixton—108 to 114, even, Poplar Walk-road, 81 years, ground-rent 16*l.* 1,020

JUNE 11.

By ROBERTS & BARNARD.

Hackney—Freehold ground-rent of 105*l.*, reversion in 20 years 2,740
Battersea Park-road—No. 225, term 77 years, ground-rent 8*l.* 800

By R. SEARLE.

Holloway-road—No. 200, term 25 years, ground-rent 40*l.* 330

By R. REID.

Edgware-road—1, Chapel-place, 34 years, no ground-rent 70
1 to 4 and 4a, Hardington-place, 34 years, no ground-rent 627
404, 408, and partly 408, Edgware-road, 37 years, no ground-rent 160
115, Princes-street, 37 years, no ground-rent 100
Dorset-square—No. 27, term 24 years, no ground-rent 455
Willesden—1 and 2, Reform-place, 11 years, no ground-rent 170

By FURBER, PRICE, & FURBER.

Belgravia—47, Gloucester-street, 52 years, ground-rent 12*l.* 1,095
Bloomsbury—Ground-rents of 175*l.* 10s. a year, term 22 years 990
Essex—Great Wakering—Rent charge of 5*l.* 4s. a year 119

By DEBENHAM, TEWSON, & Co.

West Dulwich—1, 3, 5, and 7, Park-road, freehold. 1,800

By NEWSON & HARDING.

Hornsey—"The Elms," with grounds, copyhold ... 2,040
Hampstead—2, Britannia-villas, freehold 680
Hornsey-road—47, Isledon-road, 66 years, ground-rent 6*l.* 15s. 400

By E. STIMSON.

Walworth—75, 77, and 79, Rodney-road, 84 years, ground-rent 23*l.* 10s. 1,390
22, 24, and 24a, Steedman-street, 7½ years, ground-rent 39*l.* 140
Kingsland—66, Ufton-road, 35 years, ground-rent 4*l.* 305
Mildmay Park—13, St. Jude-street, 47 years, ground-rent 4*l.* 270
Bexley Heath—1 and 2, Pett's Cottages freehold ... 350
Brixton—27, Plato-road, 82 years, ground-rent 6*l.* 10s. 340
26, Josephine-avenue, 80 years, ground-rent 10*l.* . 600

By NORTON, TRIST, WATNEY, & Co.

Highbury—An enclosure of freehold land, 14½ acres 18,200
17, 20, and 22, Highbury-terrace, freehold 5,050
12, 13, and 14, Highbury-terrace, freehold 3,890
7, 8, and 9, Highbury-terrace, freehold 3,190
1, 4, and 6, Highbury-terrace, freehold 4,170
Holloway-road—Ground-rent, 19*l.* 10s., reversion in 24 years 1,220
Ground rent, 65*l.*, reversion in 19 years 1,920

By C. C. & T. MOORE.

Barking-road—Nos. 364 and 366, freehold 1,140
Clapton—178, Evering-road, 89 years, ground-rent 12*l.* 840
Poplar—1 to 4, Flint-street, 77 years, ground-rent 9*l.* 14s. 825
82 to 92, Flint-street, 77 years, ground-rent 23*l.* 2s. 1,520
Bromley—55 to 63, odd, Devas-street, 53 years, ground-rent 10*l.* 7s. 400
41 to 53, odd, Devas-street, 36 years, ground-rent 16*l.* 750
2 and 4, Reeve's-street, 77 years, ground-rent 5*l.* 2s. 550
Bethnal Green—10 to 18, even, Gardner's-road, 51 years, ground-rent 18*l.* 1,340
12 to 17, Hartley-street, 41 years, ground-rent 18*l.* 1,310
South Hackney—86, Gore-road, 68 years, ground-rent 7*l.* 470
Bow—114 to 121, Antill-road, 62 years, ground-rent 18*l.* 2,510

JUNE 12.

By DALE & SON.

Whitechapel—86, Back Church-lane, 10½ years, ground-rent 5*l.* 10s. 145

By BAKER & SONS.

Hanwell—The residence called "Hanwell Park," and 20 a. 3 r. 13 p. 7,100
Enclosures of land, 24 a. 1 r. 34 p., freehold 6,000
Shenley, Herts—Enclosures of land, containing 36 a. 3 r. 15 p. 3,130
Chiswick—"Sutton Court Lodge," and 9 a. 3 r. 13 p., freehold 8,500
A plot of freehold land adjoining 1,200

By G. A. WILKINSON.

City—15 and 16, Bishop's Court, freehold 1,140
Warwick-lane—Two freehold sites, area 4,275 ft. . 10,525
Muswell Hill—Two enclosures of land, 13 a. 3 r. 22 p., freehold and copyhold 4,900
An enclosure of land, 8 a. 2 r. 24 p., freehold 7,100

MEETINGS.

SATURDAY, JUNE 20.

St. Paul's Ecclesiological Society.—Visit to Hedsor and Cookham. Train to Taplow from Paddington, 2.30 p.m.

THURSDAY, JUNE 25.

Association of Municipal and Sanitary Engineers and Surveyors.—Annual Meeting (at Institution of Civil Engineers). 1. Annual Report and other business. 2. President's Address. 3. Mr. W. Santo Crimp on "Street Lighting." 4. Professor Wanklyn on "Sanitary Gasmaking." 5 (Time permitting). Discussion on the Report of the Royal Commission on the Housing of the Working Classes, to be opened by Mr. E. B. Ellice-Clark. 12 noon.—The Annual Dinner will be held at the Criterion Restaurant at 6.30 p.m.

FRIDAY, JUNE 26.

Association of Municipal and Sanitary Engineers (second day).—1. Mr. T. de C. Meade on "The Highgate Hill Steep Grade Tramway." 2. Mr. S. Gamble on "Dangerous Structures." 11 a.m.—Reception of the members at the Mansion House by the Lord Mayor, who

will entertain them to luncheon. 1 p.m.—Visit to the Holborn Viaduct Subways. 3 p.m.—Visit to the London Central Markets. 4 p.m.

SATURDAY, JUNE 27.

Association of Municipal and Sanitary Engineers (third day).—Visit to Blackfriars Railway Bridge Works. 9.45 a.m.—Leave at 11.15 a.m. by train from Blackfriars (District Railway) for Putney, to visit the new Putney Bridge Works.

Miscellanea.

Mr. S. Dutton Walker, F.S.A.—We regret to announce the death, at the age of fifty-two, of Mr. Samuel Dutton Walker, F.S.A., of the firm of Messrs. Walker & Howitt, architects, Nottingham, which took place at his residence on Monday last. The deceased evinced considerable talent, as may be seen by the buildings in various parts of the town erected from his designs. He also took an active interest in the management and welfare of the Nottingham School of Art, which institution benefited to no inconsiderable extent by his generosity and counsel. He was instrumental in founding two scholarships in connexion with that institution, the funds of one of which were devoted to enabling the holder to study church architecture abroad. For many years after its erection the School of Art presented an unfinished and by no means artistic appearance, owing to the capitals of the pillars being left as they came from the quarry for lack of funds. Mr. Walker took the matter in hand, and soon succeeding in obtaining the necessary funds, converted, by the aid of the mason and carver, what was once an eyesore into an ornament and source of attraction. Mr. Walker was ever ready to give the public the benefit of his knowledge and experience on architectural and other matters by reading papers before the various societies in the town.

The "A B C" Sewage System and the Acton Local Board.—At the meeting of this Board on Tuesday night it was resolved to accept the terms offered by the Native Guano Company to treat the sewage of Acton by means of the "A B C" system. This has reference, however, only to the sewage of houses built within the last two years, the sewage from all properties built earlier than this period being allowed, in pursuance of a judicial decision two years ago, to flow into the Stamford Brook portion of the metropolitan system. But this resolution of the Acton Board is important as affording the "A B C" Company an excellent station conveniently near London where their system can be seen at work. The company has agreed to treat the sewage and produce an effluent water up to the requirements of the Thames Conservators for an annual subsidy of 200*l.* (calculated on a basis of 300 houses, and a population of 1,500), and 5s. increase for each ordinary house over and above the 300 houses. The Board has to provide complete works and steam power, with the exception of the sludge-presses and mixing and other apparatus, which the company will supply and maintain. The local authority undertakes to deliver the sewage into the tanks free from rain-water; though some members were strongly of opinion that rain-water should not be altogether excluded, as it was the means which nature had provided for the flushing of the sewers. The company, moreover, deposit 500*l.* with the Board as security against failure, and indemnifies the Board against all loss from proceedings taken against the Board in consequence of the condition of the effluent water. On the whole, the terms were considered very favourable to the Board.

The Stewart Improved Electric Indicators.—In these electric bell indicators, by Messrs. Watford & Stewart, the coils and magnets are mounted on a casting which has two arms, on which hang the discs, exactly fitting into a hole cut in the front of the indicator. When a signal is given the discs are drawn to the magnets (about an inch) and then swing backwards and forwards for from two to three minutes as required. The arrangement is so simple that it is impossible for it to get out of order. The discs are large, being 3 ft. and 2½ ft., so that they are easily seen, and are such as to lend themselves freely to decorative purpose, being made to harmonise with the decorations of the hall or room from which the signal is given. Two of these indicators are now fitted up at Mr. Stewart's exhibit, Stand No. 1,377, East Arcade, International Inventions Exhibition.

The Safety of Cast-Iron Columns.—The Berlin police authorities, in consequence of unfavourable experiences with cast-iron columns in recent fires at Berlin, have lately issued regulations forbidding the use of such supports in the construction of dwelling-houses, but permitting the employment of columns of wrought-iron and Dutch brick in cement-mortar. Cast-iron columns may only be employed if they are surrounded with immovable mantles of wrought-iron, separated from them by an air space. Professor Bauschinger, of München, has recently experimented with columns of cast and wrought iron, and pillars of stone, brick, and cement-mortar. His results appear to throw doubt on the discretion of the Berlin authorities. He heated cast and wrought iron columns weighted with loads usually imposed in structures first to 300°, next to 600°, and finally to red-heat, and suddenly cooled them afterwards by a jet of cold water, as applied in extinguishing fires. The experiments demonstrated that cast-iron columns, although they were bent by red-heat, and showed transverse cracks when water was applied, supported the load imposed upon them, whilst wrought-iron columns were bent before arriving at a state of red-heat, and were so much distorted by the application of water that straightening was out of the question. In reality, they would have collapsed under the load they had to support. Professor Bauschinger concludes from his experiments that cast-iron columns, notwithstanding cracks and bends, would continue to support the loads imposed upon them, while wrought-iron columns would not. In examining pillars of stone, bricks, and cement concrete, the latter proved to be the best. Concrete pillars withstood the action of fire for from one to three hours; those of ordinary bricks, as well as those of clinkers, set in cement mortar, displayed great resistance; whilst natural stone,—granite, limestone, and sandstone,—were not fireproof.—*Iron.*

Safety of Theatres and other Places of Public Resort.—At the meeting of the Metropolitan Board of Works on the 12th inst., a report was received from the Building Act Committee, recommending that Mr. Spencer Chadwick be informed, in reply to his letter stating that he has been instructed by Mr. J. C. Humphreys to prepare drawings for the re-erection of the building known as "Humphreys' Hall," at Knightsbridge, which was recently destroyed by fire, and asking for a copy of the Board's requisitions for the original building, together with any other suggestions which may be considered advisable with respect to the proposed new building, that such requisitions are no longer applicable, but that if it is proposed to open the new building as a licensed place of public entertainment, it must be constructed strictly in conformity with the Board's regulation; and further recommending that a copy of such regulations be sent to Mr. Chadwick, and that he be also informed that he must submit his drawings and specification to the Board for their approval before the commencement of the works. Also recommending, with reference to the letter from Sir S. Ponsonby-Fane, stating that the Lord Chamberlain will be ready to consider the draft of a Bill transferring to the Board the licensing of theatres in London under his Lordship's jurisdiction,—provided the measure embraces the licensing of all theatres and places of public amusement within the Metropolitan District, and that, meanwhile, his Lordship hopes that he may be favoured with the advice of the Board as to the structural security of the theatres licensed by him,—that the letter and the whole question of further proposed legislation with respect to places of public entertainment in the metropolis be referred to the Works and General Purposes Committee, for consideration and report. These recommendations, with some others of a cognate character, were adopted.

The Holloway Sanatorium, Virginia Water.—On Monday last the Prince of Wales formally opened this institution, founded at the cost of the late Mr. Thomas Holloway. The architect of the building is Mr. W. H. Crossland. It has been fully described in past volumes of the *Builder*, and among the illustrations of the building which we have published is a large view of the interior of the Recreation Hall, in which last Monday's ceremony took place. This illustration, drawn by Mr. H. W. Brewer, appeared in the *Builder* for Jan. 7, 1882. Upwards of 300,000*l.* have been spent upon the building.

Cholera in Europe.—The increase of cholera in the east of Spain and the invasion of fresh towns may be regarded as an indication that the year will not pass away without a repetition of some of the calamities which marked the appearance of the disease in France and Italy last summer. As yet there is no confirmation of the report that Marseilles is again the seat of the disease; but there can be no question of its prevalence in Madrid, and as the season progresses and the warm weather of June and July has had opportunity to exert its influence, we shall doubtless hear of the extension of cholera into more northern latitudes. Whether England may come within the area of its operations during the present year it is as yet too early to predict; but the fact that the second week of June has nearly ended without any sign of cholera in the direction which it usually follows before reaching this country is no criterion that we shall escape. The inoculations of Dr. Ferrán will doubtless excite more interest on the Continent than in England; our own defences against the disease are fortunately not only of a more trustworthy but of a more permanent character.—*The Lancet.*

International Inventions Exhibition.—Amongst the recent additions to the Historic Loan Collection is Queen Elizabeth's lute (lent by Lord Tollemache of Helmingham), which was left by the queen, in 1584, at Helmingham Hall, Suffolk, where it has been preserved until the present day. The lute is in an exceptionally fine condition, and bears the maker's name, "Joannes Rosa Londini Fecit. In Bridwell, the 27th of July, 1580." An extremely valuable collection of early manuscripts has also been received from the Stiftsbibliothek of St. Gall, including the celebrated copy of Notker's German translation of the Psalms, and the Antiphoner traditionally said to have been brought from Rome to St. Gall in the eighth century. Collections of portraits in oil have been received from the Royal Society of Musicians and the Bodleian Library. The decorated spinet made for Queen Christina is lent by Lord de Lisle; and autograph letters of Mendelssohn, Franz, &c., Beethoven's will, and many other valuable manuscripts, have also been added to the collection.

Liverpool Architectural Society.—The second meeting of the Junior Debating Club was held at the Rooms, No. 9, Cook-street, on the evening of Monday, the 15th inst. Mr. James B. Hikins was elected chairman for the evening. There was a good attendance of members. The paper for the evening was on "Early Gothic Vaulting," and the lecturer, Mr. Thomas J. Dalziel (visitor), prefaced his remarks by a rapid survey of the various styles of vaulting that preceded the Early Gothic. Mr. Dalziel drew attention to the capabilities of pointed barrel-vaulting, giving several examples of its adaptation to the roofing of polygonal apses and their aisles, &c. He advocated the use of ridge-ribs; but admitted that, unless in the case of vaults having intermediate ribs introduced between the diagonal and transverse ribs, they were constructionally unnecessary. A discussion followed the reading of the paper, in which Messrs. J. S. A. Mercer, Edmund Rathbone, J. H. Dawson, &c., took part, the proceedings terminating with the usual votes of thanks.

Public Works at Portsmouth.—The Mayor of Portsmouth has laid the foundation-stone of a new wharf in the upper part of the harbour, the contract, which was given to Mr. F. Bevis, of Landport, amounting to upwards of 30,000*l.* The quantities were taken out by Mr. H. P. Foster, of John-street, Adelphi, who has for some years acted as quantity surveyor to the Portsmouth Corporation, and has in that capacity been connected with the erection of a gaol and lunatic asylum, and the drainage works. A committee of the Corporation is now engaged in settling the question of a site for a Town Council House, and when that has been settled Mr. Foster will be instructed to take out the quantities for that building.

Cabmen's Shelter Fund.—The new cabmen's shelter recently placed on the cab-stand at Hyde Park-corner (opposite St. George's Hospital) was formally opened by Mr. F. A. Bevan on Tuesday afternoon. This shelter,—the gift of Miss Paris,—which is constructed of corrugated iron painted, has been built by Messrs. J. Arthur Young & Co., of Victoria-street, and is the thirty-sixth shelter erected in London by the Cabmen's Shelter Fund.

CONTRACTS.

Epitome of Advertisements in this Number.

Nature of Work, or Materials.	By whom required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.	Page.
Erection of Shops	.....	E. Monson, jun.	June 23rd	ii.
Kerbing Works	Bromley Local Board	*Official*	do.	ii.
Iron and Concrete Fireproof Floor	.....	Carter & Son	June 24th	xx.
Painting and Whitewashing	West London Sch. Dist.	*Official*	June 26th	xx.
Flushing Tanks and Pipe Sewer	Beckenham Local Board	G. B. Carlton	June 29th	ii.
Weighbridge	Met. Asylums Board	A. & C. Harston	do.	xx.
Paving	St. Giles, Camberwell	*Official*	do.	xiii.
Pipe Sewer	do.	do.	June 30th	xiii.
Erection of Hall, &c.	Bognor Assembly Room Association, Limited	A. Smith	do.	xiii.
Concrete Wall in Dock, and Retaining Wall	Tottenham Local Board	— De Pape	do.	xx.
Paving High-street	New Windsor U. S. A.	*Official*	do.	ii.
Laying Pipes, &c.	Cardiff Corporation	J. A. B. Williams	July 1st	ii.
Flushing Syphons, &c.	Chiswick Local Board	A. Ramsden	do.	xx.
New College, Canterbury	Kent Wesleyan Methdst School Association	Chas. Bell	July 2nd	ii.
Construction of the Dewsbury Branch Railway	Great Northern Ry. Co.	J. Fraser & Sons	July 3rd	ii.
Making Roads, Draining, &c., Erection of Chapel and Lodge, &c.	Burial Board, St. Margaret's, Barking	C. J. Dawson	July 4th	ii.
Broken Guernsey Granite	Bermondsey Vestry	*Official*	July 6th	ii.
Sewerage Works, Henley-on-Thames	Henley-on-Thmes U.S.A.	I. Shone	July 7th	xiii.
Paving	Brentford Local Board	— Lacey	do.	xx.
Officer's House, Cottages, &c.	Admiralty	*Official*	July 10th	ii.
Sewage Works	Portsmouth U. S. A.	Sir F. Bramwell	July 15th	ii.
Brick Sewer and Subway, Footways, &c.	Met. Board of Works	*Official*	July 16th	ii.
Oak Fencing	St. Peter's Ch., Hornsey	.....	Not stated	i.
Semi-Detached Villas, Leamington	Lock & Gilbert	F. Foster	do.	xiii.
Erection of a Wesleyan Chapel, Wolverhmptn	.....	C. Bell	do.	xiii.

TENDERS.

For the erection of board-room and offices, dispensary and relief offices, in the Clerkenwell-road, London, for the Guardian of the Poor of the Holborn Union. H. Saxon Snell & Son, architects, 22, Southampton-buildings, London:—

Perry & Co.	£18,929 0 0
Kirk & Randall	18,320 0 0
Mowlem & Co.	18,300 0 0
W. J. Adcock	18,180 0 0
B. E. Nightingale	17,947 0 0
Wall Bros.	17,899 0 0
Mark Gentry	16,490 0 0

For whitewashing, distempering, cleaning, &c., at the St. Olave's Union Infirmary, Rotherhithe, for the Guardians of the Poor of the St. Olave's Union. Messrs. H. Saxon Snell & Son, architects, 22, Southampton-buildings, London:—

W. Bamford	£555 0 0
Vigor & Co.	411 0 0
Sheerman & Sons	338 0 0
Dicksee & Dicksee	308 0 0
W. G. Lilly	234 0 0

For proposed new building for the College of Preceptors, on the site of Nos. 2 and 3, Bloomsbury-square, and 23, Southampton-street, Holborn. Mr. F. Pinches, architect. Quantities supplied by Mr. H. P. Foster:—

Lovatt	£12,118 0 0
Chappell	11,684 0 0
Foster & Dicksee	11,399 0 0
Bywaters	11,274 0 0
Macey	11,153 0 0
Nightingale	10,978 0 0
Kirk & Randall	10,920 0 0
Wall	10,785 0 0
Patman & Fotheringham	10,563 0 0
Colls	10,560 0 0
Mowlem	10,480 0 0

For rebuilding Crowder's Music Hall, Greenwich. Mr. James Geo. Buckle, architect, 10, Adam-street, Adelphi:—

Shurmur	£2,255 0 0
Steel Bres.	2,195 0 0
G. W. Sly	2,100 0 0
Laing & Son	1,970 0 0
Elkington	1,935 0 0
Searchfield & Son	1,774 0 0

For the erection of new stables, &c., at the "Wingfield," Banstead, for Mr. W. Johnson. Mr. C. C. Cummins, architect:—

S. Evans, Carshalton	£693 0 0
W. Hazell, Mitcham	680 0 0
W. Taylor, Banstead	633 0 0

For the erection of the Baptist Tabernacle and Schools, Regent-street, Swindon. Mr. W. H. Read, architect:—

Forse, Bristol	£6,990 0 0	Brick columns in lieu of stone.
D. C. Jones & Co., Gloucester	6,880 0 0	... £6,840 0 0
King, Gloucester	6,695 0 0	... 6,690 0 0
W. Jones, Gloucester	6,400 0 0	... 6,498 0 0
Webb, Swindon	6,148 0 0	... 6,260 0 0
Phillips, Swindon	6,054 6 0	... 6,026 0 0
Williams, Swindon	6,000 0 0	... 5,906 16 0
Wiltshire, Swindon	5,936 0 0	... 5,800 0 0
Barrett	5,798 10 0*	... 5,796 0 0
	* Accepted.	... 5,644 0 0

For market, &c., Brixham. Mr. G. Soudon Bridgman, architect, Torquay:—

J. Reed, Plymouth*	£3,500 0 0
Dart, Devonport	3,059 0 0
Spark & Hayman, Brixham	3,047 0 0
Goss, Torquay	2,864 0 0
Vanstone & Mumford, Torquay	2,775 0 0
Lamacraft & Hawkins, Dawlish*	2,770 0 0
Hazlewood, Brixham	2,770 0 0
M. Bridgman, Paignton	2,669 0 0
Drake, Torquay	2,655 0 0
Webber, Paignton	2 610 0 0
Smerdon, Torquay	2,586 0 0
Crocker, Torquay	2,523 0 0
Foaden, Ashburton	2,424 0 0
[Architect's estimate, 2,650*l.*]	
* Too late.	

For the erection of oak cleft fence at new Sanitary Hospital, Bournemouth, for the Bournemouth Commissioners. Mr. G. R. Andrews, surveyor:—

Rowland Bros., Bletchley	£366 15 0
Hoare Bros. & Walden, Bournemouth	338 1 6
Tanner, Ringwood	299 12 6
Crook, Southampton (accepted)	289 15 0
Harris-Corbin, Bournemouth*	232 10 0
Pickthall, Bournemouth (withdrawn).	214 15 6
* Informal.	

For building a roadman's cottage and fixing weighbridge, for the Louth Corporation. Mr. T. W. Wallis, Borough Surveyor:—

Harrison Bros.	£218 17 6
Clark & Reed	205 10 0
H. Vickers	205 0 0
R. Mawer	184 12 4
P. Allen	165 0 0
Thompson & Sons (accepted)	130 0 0

For alterations at the Cambridge Music Hall, Commercial-street, E., for Mr. William Riley. Mr. Edward Clark, architect, 432, West Strand:—

F. Mark	£2,275 0 0
H. Banks	2,231 0 0
C. Wall	2,213 0 0
T. Green	2,203 0 0
Johnson & Manners	2,085 0 0
J. Anley (accepted)	1,946 0 0

For the erection of farmhouse and alterations to hind's cottage, Low Cocken, co. Durham. Mr. F. B. Leighton, architect, Fence Houses:—

Thompson & Pimshon, Chester-le-Street	£620 0 10
J. Jopling, Chester-le-Street	619 1 11
G. & J. Oates, Penshaw	590 16 4
R. Allison, Sunderland (too late)	562 0 0
T. Hunter, Washington, co. Durham	533 1 10
Atkinson & Lodge, Plawsworth*	514 15 0
[Architect's approximate estimate, 550*l.*]	
* Accepted.	

For the erection of a suspension foot-bridge over the river Thames, and a lattice-girder foot-bridge over the lock cut adjoining, for the Teddington Local Board, Teddington. Mr. George Pooley and Mr. Edward Thompson, joint engineers, 26, Charing Cross:—

J. Tildesley, 73, Gracechurch-street	£8,164 0 0
W. Hill & Co., 26, Great George-street	7,803 0 0
T. Vernon & Co., 7, Westminster-chambers	6,633 7 0
W. Hickinbotham, Teddington	6,512 0 0
A. D. Dawnay, London Bridge House	6,505 0 0
M. H. Davies, Bermondsey	6,100 0 0
Kirk & Randall, Woolwich	5,970 0 0
S. Chafen, Rotherhithe	4,900 0 0
B. Cooke & Co., Phœnix Wharf, Battersea	4,818 0 0

For the road-making, paving, kerbing, channelling, surface-drainage, and other works in Quadrant-road, Richmond, Surrey. Mr. Walter Brooke, Assoc. M. Inst. C.E., Town Surveyor:—

G. Alldred, Chiswick	£531 0 0
Bloomfield, Tottenham	490 17 7
Nowell & Robson, Kensington	473 0 0
Mowlem, Burt, & Freeman, Westminster	457 1 3
Marshall, Brighton (accepted)	445 0 0
F. Sims, Richmond (withdrawn)	416 0 0
[Surveyor's estimate, 494*l.* 10s.]	

Accepted for rebuilding shop, 108, Salmon's-lane, Limehouse, for Messrs. Charlesworth & Austin. Messrs. T. & W. Stone, architects, 2, Great Winchester-buildings, London Wall:—

Howlett, Limehouse	£245 0 0
[No competition.]	

For repairs to houses, Nos. 82 and 84, Rhodeswell-road, Limehouse, and St. Leonard's-avenue, Bromley, for Mr. Charles Berry. Messrs. T. & W. Stone, architects:—

Peppiatt	£140 0 0
Salt	130 0 0
Howlett, Limehouse	98 0 0
Deacon	95 0 0
Walker (accepted)	60 0 0

For the erection of three houses at Peckham Rye, for Mr. Martin:—

Riches	£1,074 0 0!
Robson	956 0 0
White & Co.	901 0 0
Pack	893 0 0
Long	890 0 0
Kilbourn	885 0 0
Buller	858 0 0
W. Martin	857 0 0
Leeks	850 0 0
Aldridge & Jenvey	830 0 0
Longdon	829 0 0
Pinage	825 0 0
Harris	815 0 0
Avis & Son	810 0 0
R. Martin	799 0 0
Price	793 0 0
Ash	784 0 0
Sugden	779 0 0
Lamprell	769 0 0
Andrews	758 0 0
Hill & Tester	745 0 0
Austin & Emery	730 0 0
Manning	695 0 0
Godbolt	690 0 0
Homes, Frewer, & Co.	680 0 0
Saunders	660 0 0
Watkins	630 0 0
Holding	618 0 0
Storey	590 0 0
Barkett	550 0 0
Boxall & Son	490 0 0
Cox	475 0 0!

For alterations to back premises, 146, Salmon's-lane, Limehouse. Messrs. T. & W. Stone, architects:—

Johnson	£267 0 0
Walker	249 0 0
Salt	239 0 0
Peppiatt	170 0 0
Deacon	157 0 0
Howlett, Limehouse (accepted)	149 10 0

For mission-hall, Sheepcote-lane, Battersea. Messrs. Searle & Hayes, architects, 66, Ludgate-hill. Quantities supplied:—

S. Pocock	£3,021 0 0
Dove Bros.	2,375 0 0
Candle	2,330 0 0
S. Higgs	2,260 0 0
Thos. Wontner Smith & Son	2,179 0 0
Holloway	2,050 0 0

For alterations and repairs at 35, Highbury-place. Mr. J. D. Mathews, architect, 11, Dowgate-hill, E.C.:—

Dove Bros.	£595 0 0
Williams & Son	513 0 0
Thos. Wontner Smith & Son	468 0 0
Spencer & Co.	440 0 0

For new house at Shelford, Cambs., for Mrs. Hall. Messrs. Arundell & Tarte, architects, London and Cambridge:—

W. Bell & Sons, Cambridge	£1,445 0 0
W. Sindall, Cambridge	1,400 0 0
J. Saint & Sons, St. Ives, Hunts	1,292 13 0
Johnson & Manners, London	1,280 0 0

For works to the Church of St. Stephen, Walbrook (exclusive of stained-glass work amounting to about 1,000*l.*). Mr. Alexander Peebles, architect. Quantities by Mr. W. E. Stoner:—

Holland & Hannen	£2,741 0 0
Ashby & Horner	2,600 0 0
Brass & Son	2,551 0 0
Colls & Son	2,474 0 0
Ramsey	2,462 0 0
Downs	2,398 0 0

For building two villa residences at Bedford for Mr. G. S. Plowman. Messrs. Usher & Anthony, architects and surveyors, Bedford:—

W. Freshwater, Bedford	£1,389 0 0
T. Spencer, Bedford	1,380 0 0
J. P. White, Bedford	1,373 0 0
Peters & Co., Potton	1,371 0 0
Warton & Co. Bedford	1,369 0 0
S. Foster, Kempston	1,329 0 0
G. Harrison, Bedford	1,311 0 0
J. Potter, Bedford	1,270 0 0

For the erection of five cottages on the Bower Estate, Bedford. Mr. H. Young, architect:—

Wharton & Walker	£960 0 0
Corby & Sons	950 0 0
Warwick & Osborne	941 7 0
J. P. White	758 0 0
G. Harrison	752 0 0
T. Laughton	749 0 0
J. Smith	737 0 0

For alterations and additions to the male and female imbecile wards at the Workhouse, Chesterfield. Messrs. Rollinson & Son, architects, Chesterfield:—

A. Wright, Chesterfield	£445 0 0
F. Glossop, Chesterfield	445 0 0
J. Margerison, Barlow	398 0 0
E. Tinkler, Clay Cross (accepted)	394 12 0

For fixing wrought-iron railing, &c., on the Highgate Archway (north side), for the Hornsey Local Board. Mr. T. de Courcy Meade, engineer and surveyor:—

Brass & Co., Pentonville-road	£925 0 0
Aspinall & Son, Hoxton	560 0 0
Gullett & Dyke, Highgate-road	492 10 0
Mowlem & Co., Westminster (accepted)	364 0 0
Rowe, Edmonton	325 0 0

For the erection of a pair of semi-detached villas at Green Sea Park Estate, Walthamstow, for Mr. W. Iszard:—

W. W. Goode	£670 0 0
E. L. Price	650 0 0
J. Borden	630 0 0
J. Stone, Tottenham*	630 0 0
* Accepted, with hot-water service.	

For additions to Arlington House, Eastern-road, Brighton, for Mr. R. Burman. Mr. M. E. Macartney, B.A., architect, 14, Hart-street, Bloomsbury. Quantities by Messrs. Evans & Deacon, 1, Adelaide-street, Charing Cross:—

Foster & Dicksee	£950	0	0
Maides & Harper	897	0	0
A. M. Deacon & Co.	835	0	0

For alterations to the buildings of the St. James's Hall Company. Mr. W. Emden, architect, 28, Southampton-street, Strand. Quantities by Messrs. Evans & Deacon, Adelaide-street, Charing Cross:—

Contract No. 1.

Nightingale	£2,450	0	0
McLachlan	2,210	0	0
Dickenson	1,998	0	0
Bywater	1,938	0	0
Kirk & Randall	1,775	0	0
H. & E. Lee	1,757	0	0
Swanson (accepted)	1,598	7	2

For new roads, sewers, and surface-water drains, &c., for the British Land Company, Limited, on their estate at Earlsfield, Wandsworth. Mr. Henry B. Michell, surveyor:—

Nowell & Robson, Kensington	£2,738	0	0
W. Harris, Camberwell	2,685	0	0
F. W. Keeble, Regent's Park	2,552	0	0
E. Wilson, Walthamstow	2,305	0	0
J. Bloomfield, Tottenham	2,300	0	0
J. Pizzey, Hornsey	2,257	0	0
J. Jackson, Leyton	2,199	0	0
C. Killingback, Camden Town	2,184	0	0
Peill & Sons, Bromley (accepted)	2,162	0	0

For taking down and rebuilding the Bakers' Arms Inn, Waddesdon, for Mr. Thomas Parsons. Mr. Charles Carter, architect, Great Marlow:—

Taylor & Grist, Bierton	£756	0	0
C. Crook, Waddesdon	740	10	9
G. H. Gibson, Wycombe	740	6	9
G. Cooper & Co., Aylesbury (accepted)	707	12	0

For repairs and alterations at the Old Parsonage, Great Marlow, for Mr. P. W. Morgan. Mr. Charles Carter, architect, Great Marlow:—

W. Creed, Maidenhead	£597	0	0
G. H. Gibson, Wycombe	498	0	0
J. S. Carter, Marlow	450	0	0
A. Corby, Marlow	449	0	0
A. B. Walker (accepted)	444	0	0

For pulling down and rebuilding 246, Upper-street, Islington, for Mr. Harding. Mr. E. J. Harrison, architect:—

Dove Bros.	£2,715	0	0
Dearing & Son	2,580	0	0
Coombe & Son	2,567	0	0
Wontner Smith	2,469	0	0
Stimpson & Co.	2,390	0	0
Baylis	2,210	12	0
Ward & Lamble (accepted)	2,137	0	0

For the erection of stabling at Rutland Lodge, Shortlands, for Mr. W. W. Palmer. Mr. Charles J. Smithem, architect:—

C. Ansell	£821	0	0
R. Lowe	649	15	0
J. Taylor & Son	610	0	0

For the erection of business premises and stabling at 23, Bermondsey New-road, for Mr. J. E. Armfield. Mr. Charles J. Smithem, architect:—

Spencer & Co.	£1,760	0	0
W. & F. Croaker	1,620	0	0
Battley	1,567	0	0
Shepherd	1,195	0	0

Accepted, for erecting shop and warehouse at Whitecross-street. Messrs. W. & J. Y. Brown, architects, 6, Poultry, E.C.:—

F. Smith £850 0 0

[No competition.]

Accepted for reinstating damage by fire at 271 and 273, Oxford-street, W. Mr. W. Stokes, architect:—

F. Smith, 54, Coleman-street, City ... £346 10 0

Accepted for the completion of three houses in Overhill-road, Dulwich. Mr. J. Clarkson, architect:—

T. Watson, Dulwich £625 0 0

[No competition.]

For erecting a billiard-room and other additions at 10, Lyndhurst-road, Hampstead. Mr. Alfred Burr, architect, 10, Queen-square, W.C.:—

Richardson	£398	0	0
Wells & Son	376	0	0
Bridgman	368	0	0
T. White	360	0	0

Re Tenders for Making-up Mount View-road.—Mr. T. de Courcy Meade, Engineer and Surveyor to the Hornsey Local Board, writes:—"I notice in last week's *Builder* your extract from Mr. Nicholls's letter *re* making-up Mount View-road. I beg to inform you that the prices supplied from this office were correct, the tender of Mr. Walker and not Mr. Nicholls having been accepted by the Board. Mr. Walker subsequently withdrew his tender, and consequently at the last meeting of the Board the tender of Mr. Nicholls, the next lowest, was accepted, subject to satisfactory references."

Wesleyan Methodist Schools, Folkestone.—Mr. D. Baker, of Tontine-street, Folkestone, writes:—"I find in your last week's *Builder* you omit my name as one of the tenderers; my tender, amounting to 5,964*l.*, was the lowest, and most unfairly passed over in favour of builders residing in the same town as the architects. It is omitted in your list." [We printed the list as it was sent.]

SPECIAL NOTICE.—Lists of Tenders frequently reach us too late for insertion. They should be delivered at our Office, 46, Catherine-street, W.C., *not later than Four p.m.* on THURSDAYS.

TO CORRESPONDENTS.

A. B. J.—F. S. (we fear it is not a class of art which interests us much).—Rev. N. M. (two communications).—S. & E.—T. G. J. (shall be attended to).—W. K.—F. J. C.—W. S. (below our mark).—J. B.—H. R.—R. H. C.—F. H. B.—M. & Co.—W. C. T.—A. W. T. (they were mostly Germans).—G. M.—F. W. R. & Co.—Y. & M.—F. B. & Co. (drawings received).—"Country House" (the only thing we can recommend under the circumstances is the "Patent Lead-encased Block-tin Pipe," a pipe manufactured with a tin lining pipe encased in and united with it: but it is costly).—F. M.—C. & W.—B. & H. (shall have attention).—Rev. W. F. C. (thanks for your note).

All statements of facts, lists of tenders, &c., must be accompanied by the name and address of the sender, not necessarily for publication.

We are compelled to decline pointing out books and giving addresses.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

We cannot undertake to return rejected communications.

Letters or communications (beyond mere news-items) which have been duplicated for other journals, are NOT DESIRED.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; all communications relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

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